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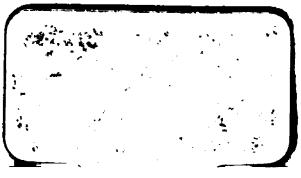

THE

ORCHID-GROWER'S MANUAL,

CONTAINING

Brief Descriptions of upwards of Eight Hundred Species and Varieties of Orchidaceous Plants;

TOGETHER WITH

NOTICES OF THEIR TIMES OF FLOWERING, AND MOST APPROVED MODES OF TREATMENT; ALSO, PLAIN AND PRACTICAL INSTRUCTIONS RELATING TO THE GENERAL CULTURE OF ORCHIDS; AND REMARKS ON THE HEAT, MOISTURE, SOIL, AND SEASONS OF GROWTH AND REST BEST SUITED TO THE SEVERAL SPECIES.

BY

BENJAMIN SAMUEL WILLIAMS, F.R.H.S.,

Author of "Select Ferns and Lycopods," "Choice Stove and Greenhouse Flowering Plants," "Choice Stove and Greenhouse Ornamental-leaved Plants," &c., &c.

FOURTH EDITION, ENLARGED AND REVISED.

WITH ILLUSTRATIONS.

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PREFACE TO THE FOURTH EDITION.

THE rapidity with which the third edition of this work has been disposed of, and the frequent assurances I have had from Amateur Orchid Growers, both abroad and at home, of the benefits they have derived from the use of it, have induced me to issue a new edition, in which many new and fine species and varieties, which have but recently been introduced into cultivation, are included.

It is a source of great satisfaction to me to know that my efforts to assist amateurs in the cultivation of the interesting and extremely beautiful class of Orchidaceous plants have not only been crowned with success, but that they have also been the means of inducing many other plant-lovers to commence their study and cultivation.

It is equally satisfactory to me to know, that the "ORCHID-GROWER'S MANUAL" is not confined, as regards its sphere of usefulness, to our own country, for it now circulates freely amongst lovers of these charming plants residing in America, Australia, the

East and West Indies and Brazil, as well as in various parts of the European Continent.

In consequence of this encouragement, I have now endeavoured to increase its utility—first, by introducing a few illustrations, which have been kindly lent to me by the Editors of the *Gardeners' Chronicle* and of the *Florist and Pomologist;* and also, more particularly, by carefully and thoroughly revising the text, which has, moreover, received many additions under the heads of both cultural treatment and descriptions of recently-introduced Orchids, of which I have now added all that appear to me to be worthy the attention of amateur growers.

It should, however, be remembered, in making use of this little volume, that it does not profess to deal with Orchidaceous plants from a scientific point of view, but simply aims at supplying some popular descriptive notes of the most beautiful kinds, and at furnishing a record of such practical information in connection with their culture gleaned from my own experience, as has enabled me to attain to a very satisfactory degree of success in the growth and exhibition of these floral gems.

B. S. WILLIAMS.

VICTORIA AND PARADISE NURSERIES,
UPPER HOLLOWAY, N., *March*, 1871.

THE

ORCHID-GROWER'S MANUAL.

INTRODUCTION.

THE cultivation of Orchidaceous plants is no longer exclusively the privilege of the few, since their nature and requirements are far better understood than was the case a few years ago. This has arisen chiefly from two causes: firstly, from the useful information given us by those who have studied the plants in their native habitats; and, secondly, from the close study and application by means of which cultivators at home have brought the results of the observations of travellers to bear in a practical manner on the culture of the plants when introduced into this country. It cannot be too strongly impressed upon the minds of all who send home plants of this order from foreign lands that every scrap of information respecting the climate, temperature, altitude, soil, &c., of the locality in which each species is found, is of the greatest importance to the cultivator no less than to the scientific observer. Not, indeed, that under cultivation we can strictly imitate the natural surroundings of each particular species or variety; neither do I think in all cases

that would be desirable, but the information would enable us to give the treatment most congenial to the requirements of each, so far as the means at our command would afford. The want of some such information has been a source of extreme vexation to many lovers of these plants in years gone by; indeed, had we received any account as to the physical and climatal surroundings of the many fine things found and collected by M. Warscewicz, and other travellers of that period, the collections of the present day would be able to boast of many fine species which have never since reached this country in a living state. The collections alluded to were, however, sent to this country in a careless manner, without the slightest indication of the conditions under which they had been growing; and, Orchidology being then in its infancy, they were nearly all killed by being subjected to intense heat, this being in those days considered the correct course to pursue with all Orchidaceous plants. Thus hundreds of beautiful species, which had been collected at great trouble and risk, and were purchased by eager amateurs at home, oftentimes at great cost, rapidly died out, simply from the prevailing ignorance of the localities in which they had been growing.

To prevent a repetition of such disasters and disappointments, the experience of those who have had the good fortune to see Orchids growing in a state of nature is of the greatest importance, giving as it does a basis of operations to any experiments which may be made. Strange as it may appear to some, and ridiculous as it has been pronounced by others, I do not consider it is advisable to imitate strictly the natural conditions in which plants are sometimes found, because we have so many proofs that, as individual specimens, the cultivated plants are frequently to be seen in greater perfection than those naturally grown; and it is only reasonable to infer

that such would be the case with the majority of small-growing tropical plants, when we consider the struggle for existence which is constantly going on throughout the vegetable kingdom, and remember that they are subject to all the vicissitudes of the weather, whereas under cultivation extreme care and attention are bestowed upon each individual plant, and no pains are spared to develop its beauties, and shield it from every harm. I admit that we should by all means take nature as our guide for the production of good plants, but it should be nature in her best garb only; and then, looking as I do upon cultivation as a help to nature, the result can only be an improvement, if success has been attained in the object aimed at.

Let me endeavour to render my meaning clear by a familiar example. I have frequently seen some of our indigenous ferns, such as *Scolopendriums*, *Lastreas*, &c., growing upon dry banks, stony ground, and old ruins, where they have presented the appearance of short, stunted, ill-favoured plants, but still they were in a state of nature. Now, no one would recommend the cultivator to imitate that phase of nature. No; rather would the counsellor say, "Go to that shady dell, with the limpid stream flowing through it; there you will see the rich green, fully developed, and graceful fronds of these gems in all their beauty." This, then, I say is the phase of nature which cultivators should take as their guide, and endeavour to improve upon; and I submit that these considerations are strictly applicable to the plants we have taken under our especial cognizance in this volume. To exemplify this I will take an extract from a letter of Colonel Benson's, one of the most acute observers and successful introducers of Orchids of the present day. He says: "*Dendrobium formosum* does not appear to seek shady places for growth; in fact, as far as my knowledge goes, few Orchids do, beyond what is given by the trees when in leaf. During the months of

February, March, and April, they must be exposed to an atmosphere of 110° in the shade. That the fresh-grown pseudobulbs are by this means reduced in size or shrivelled there can be no question; and in some of the mountain Orchids this reduction takes place to such an extent as to render it doubtful whether they are the same plants, when first seen at the end of rains." Now take the case of these plants under culture; the growing or rainy season past, their supply of water would be gradually diminished, and they would be exposed to the full effects of the sun with plenty of air, but only so long as they could withstand this treatment without shrivelling; should this condition ensue, or should exhaustion from any other cause arise, the cultivator steps in, and by judicious treatment preserves the strength and consequently the health of the plant, whilst the plants in their native localities must bear the full power of the scorching sun, let even death be the result. Here, then, I say is a proof that art does in some instances assist nature.

Nearly all epiphytal Orchids are subject to a period of rest, growth taking place during the rainy season, while their resting period occurs during the dry season. Under cultivation, however, we have to alter considerably the circumstances, and make our dry season also the coolest, which is the reverse of what the plants experience naturally; but this seems to be the most judicious plan we can adopt, for it would simply be madness to endeavour to force our Orchids to make their growth during the winter months, and rest them during the summer. The best season of rest for the majority of Orchids is from about the beginning of November until the end of February. This long period of drought predisposes the plants to blossom, and also prevents them from making weak and sickly growths, which would undoubtedly be the case in our short, dark, and sunless days of winter.

In this place, of course, rules respecting the growth and rest of Orchids can only be stated in general terms, the treatment in detail being given with the description of each particular genus. Then, again, there are certain species which are never entirely inactive throughout the whole year, amongst which may be named some of the *Odontoglossums*, *Masdevallias*, and many others beside, whose home is in the Peruvian Andes and other high mountain districts.

It is often thought that as Orchidaceous plants are so extremely tenacious of life, the fact of their dying can only be the result of carelessness in their management; but it should be borne in mind that we have under the same roof plants from many different countries, whose natural habitats must vary immensely in all respects. Now, if a little thought is only bestowed upon this fact, it should rather be a matter of surprise how so many plants are successfully managed, than how many are lost.

Epiphytal Orchids are found in tropical countries growing on the low grounds or plains, and are also met with as we ascend the mountains up to an elevation of 14,000 feet above the level of the sea. At this altitude, in New Grenada, *Oncidium nubigenum* flourishes. This is, I think, the greatest altitude at which these plants are recorded to have been found. *Odontoglossum Alexandræ* and *O. Bluntii* occur at from 7,000 to 8,000 feet elevation, as does *O. luteo-purpureum* and its varieties, *Masdevallias*, *Restrepias*, and many others from Peru and New Grenada. At such elevations, as a matter of course, these plants are naturally subjected to a low temperature, an abundant supply of water, and a very moist atmosphere throughout the year, and consequently they cannot withstand a resting season or period of drought under cultivation; whilst, if we turn to the Eastern Continent, we find such plants as *Dendrobium infundibulum*, *D. chrysotoxum*, *D. Farmeri*, *Aerides*

Lobbii, *Saccolabium ampullaceum*, *S. giganteum*, *Cypripedium concolor*, *Cymbidium tigrinum*, &c., all growing at elevations varying from 2,000 to 7,000 feet, enjoying a copious supply of water during their period of growth, and subjected to a very severe resting season. Now, as these plants grow upon the stems and branches of the forest trees, or upon rocks, they must necessarily be exposed to all the breezes that blow. How reprehensible, then, is the practice of many growers of Orchids in trying to exclude air from their Orchid houses. For the well-being of Orchids, it should be remembered that a free circulation of air is absolutely necessary, as well as an abundance of light; but cold draughts, and also the burning effects of the sun's rays, must be avoided, for it is not essential to their well-being to be hung up close to the glass, fully exposed to the blazing sun: indeed, the life of the plants would, under such circumstances, soon be sucked out of them if shading were not prepared. There are so-called observers of nature who blame the cultivator for many of his acts, and he has perhaps suffered more wrong at the hands of this class of persons upon the matter of shading, than upon any other. We are frequently told that in a state of nature such and such plants grow in most exposed situations—situations open to the full effects of a tropical sun, and that nothing can be more erroneous than the manner in which we use "blinds" for the purpose of keeping away the bright light of that luminary. All I can say in answer to these objectors is that they totally lose sight of the fact that our plants are growing under glass, which has the power of rapidly burning up the leaves and disfiguring our plants for years, if not for life. A little practice would soon teach such persons how erroneous their ideas had been, and they would soon sink their so-called natural treatment, had they to be responsible for the effects produced by their advice. In leaving this subject, I must

add that plant growers are keenly alive to the advantages of strong sunlight for their plants, but that they are too practical to allow more than is advantageous to them under the artificial circumstances in which they are placed.

Orchid cultivators, and indeed all lovers of Orchids, lost a good and valuable friend and instructor in the late Dr. Lindley; and in this particular branch of botany no one amongst us has been found competent to fill up the void. Professor Reichenbach, who was the friend of Dr. Lindley, is undoubtedly the first living authority in regard to the nomenclature of Orchids, but the fact of his labours being carried on in Germany—no fault of his, but our misfortune—cannot but fail to be disadvantageous to English cultivators. We are bound to thank Professor Reichenbach most cordially, not only for the valuable information he imparts to us, but for the extremely kind and courteous manner in which he gives the desired information to any and all who seek it at his hands.

Since the publication of the third edition of this book, horticulture has suffered a great loss by the death of Mr. James Veitch, to whose energy and spirit of enterprise we are indebted for the introduction of an immense number of our choicest plants, including not only those of the order to which these pages are specially devoted, but of others adapted for the decoration of the stove, the greenhouse, and the open garden. It is also a matter of extreme regret that his son, Mr. John Gould Veitch, should have been cut off by death also so soon after his father; for, though but a young man, he had displayed brilliant talents, both as a keen observer and a judicious collector, and this combined with a sound practical knowledge of horticulture, so that he bid fair to sustain the family reputation.

In bringing these introductory remarks to a close, I wish to record my deep sense of our obligations to the many

travellers and collectors who have added so largely to our knowledge of Orchids, and who have laboured so arduously and incessantly to enable us to enjoy the beauties of the choicest productions of the vegetable world, without the dangers and difficulties with which they had to contend. Many of them, alas! have fallen victims to the fatigues of the undertaking, and the pestilential climate, thus suffering martyrdom for the cause of horticulture. I allude specially to such men as the brothers Lobb, Hartweg, J. G. Veitch, Colonel Benson, O'Reilly, the Rev. C. Parish, Pearce, Bowmann, Weir, Hutton, Kramer, Porte, Wallis, Linden, Skinner, Hugh Low, Schlim, Warscewicz, and many others who might be named, did space permit. These were men who had in view the advancement of science, and the enriching of our collections with new plants and new forms; and their example might be followed with advantage by many of the latter day collectors, who, instead of sending home a few plants in good order, allowing the skill of the cultivator to grow and increase them at home, seem determined to exterminate the race of Orchids from their natural localities, without any one deriving benefit thereby; for when such vast quantities are gathered, they arrive in this country in an almost putrid state, arising from overcrowding; whilst, had a few dozens only been sent, and that with proper care in packing, they would in all probability have arrived in a living state.

THE TREATMENT OF TROPICAL ORCHIDS.

ORCHIDS are divided into two sections, terrestrial and epiphytal. Those are termed Terrestrial that grow in earth; such are the genera *Orchis*, *Phajus*, *Calanthe*, *Bletia*, *Cypripedium*, *Neottia*, *Goodyera*, *Epipactis*,

&c., which all draw their support directly from the ground. The Epiphytal Orchids inhabit trees and rocks, from which, however, they derive little or no nourishment. These are by far the most numerous and interesting. Some are found adhering to the stems and branches of living trees; some of them delight in elevated situations in lofty forests, while others grow upon low trees. Some occur on rocks and mountains, some on trees overhanging rivers, and some near dripping rocks—the latter, of course, requiring a particularly damp atmosphere to grow in. Those which are found in dense woods, where scarcely any sun can penetrate, require a shady moist atmosphere, whilst those found in more elevated situations do not need so much shade as the last. A knowledge of the different habitats of the various species is essential to the careful grower, in order that he may, as far as his means permit, place them in circumstances similar to those in which they make their natural growth; and it is, no doubt, to inattention, or want of information on this point, that the want of success in the culture of some Orchidaceous plants, by even the most successful of our cultivators, is to be attributed.

TREATMENT DURING GROWTH.

WE have in our Orchid houses plants from localities which vary much in every respect; some of them, moreover, produce their flowers early in spring, others in summer, and others again during the dull days of winter. It will therefore be readily understood that the period of starting into growth should vary also; but as for convenience sake we rest our Orchids in winter, the majority will begin to

push up their young shoots as soon as the days lengthen and the sun gains increased power. This being the case, when the growing season commences, the temperature of the East Indian house—the house in which the greatest heat is maintained, should be increased to 65° by night and 70° by day, while by sun-heat it may be allowed to range up to 75°. As the days lengthen, so the temperature may be permitted to increase; and during the months of May, June, July, and August, it should range from 70° to 75° by night, and from 75° to 80° by day, or by sun-heat to 85°, or even 90°, which will not do any harm, provided the plants are shaded from the direct rays of the sun.

The house devoted to the Brazilian plants and to some of those from Mexico, should be heated to about 60° by night, and from 65° to 70° by day; and as the days lengthen the temperature may be allowed to increase, so that during the months of May, June, July, and August the night heat may range from 65° to 70°, and by day from 70° to 85°. Great attention should, at the same time, be paid to the state of the atmosphere, as regards moisture. At all times of the year this is of much importance to the successful growth of the plants, for they derive the greater part of their subsistence from moisture in the air, so that wherever any plants are growing, the atmosphere should be well supplied with moisture: this is obtained by pouring water over the tables, walls, and paths of the house every morning and afternoon, thus causing a nice moist heat to rise, which is of great value whilst the plants are in a vigorous state of growth, especially as regards the East Indian Orchids, such as *Aerides*, *Saccolabium*, *Vanda*, *Phalænopsis*, *Dendrobium*, and many others requiring a high temperature, with a considerable degree of moisture. The Brazilian Orchids, most of which come from a cooler climate, not so highly saturated with vapour, of course require less heat and

moisture, but these should also have a considerable degree of warmth during their growing season.

Of late years we have had so many additions to what are called Cool-house Orchids, that it is quite necessary there should be added another house specially for their cultivation, and which we may call the New Grenada and Peruvian house; this will accommodate a great number of plants from various high mountain districts, which may be grown together under the same treatment. I do not recommend ordinary greenhouses for Orchids, for my belief is, that very few Orchid growers will uphold that treatment long; for although we are told by collectors that many of the species of epiphytal Orchids are found in localities where the temperature falls so low at times that the plants are frequently covered with a white frost, I do not think it expedient to subject them to such cool treatment in this country. The house I recommend for the *Odontoglossums* and other genera and species that come from similar regions, and, consequently, require the same treatment, is precisely the same as the others, only it must be kept at a lower temperature, say from 45° to 55° in winter, and from 50° to 65° in summer. This house should be well shaded from the sun, which will help to keep the heat down, as too much heat is dangerous for the cool Orchids. No fire heat will be required in summer except on cold or wet days and nights, the object of then having recourse to artificial heat, being to keep the house from getting too damp, dampness without warmth being very detrimental to plants of this order.

There are but few Orchids that will do without heat, except those that come from North America and other cold climates, and these are treated on in a chapter by themselves in another part of this book.

TREATMENT DURING THE TIME OF REST.

AS the time of starting into growth varies considerably with different kinds, so also, as a matter of course, will the season of rest, although with but few exceptions it comes on during the autumn months. Rest, it has been elsewhere stated, is of great importance to Orchids, as well as to other things. No plant will continue long in good health without it. My practice is to give them a long season of rest, generally from November to the middle of February. During this time the temperature of the East Indian house should be regulated so as to keep it as nearly as possible at 60° by night and 65° by day; but by sun-heat the temperature will rise a few degrees higher. Air must then be given so as to keep it about 65°; but a few degrees of solar warmth above this point will do no harm. A little air should be given on every fine day, in order to dry up the moisture; but the air must be admitted so as to pass over the hot-water pipes, so that it may become warm on entering the house. In the case of those plants that come from the hotter parts of India, the temperature should not be allowed to go below 60°. The Brazilian house, which may also include all the species from the warmer parts of Mexico, should range from 50° to 55° by night, and from 55° to 60° by day; this should not be allowed to go below 50° at night. The New Grenadan, or cool-house, should not be allowed to get below about 45°.

Rest is induced by lowering the temperature, and withholding water. During this period the plants should only receive sufficient water to keep them from shrivelling. There are, however, some that will grow during the winter months, amongst which may be enumerated many species of *Aerides*,

Vanda, Saccolabium, Phalænopsis, Zygopetalum, and similar kinds. These will require water at the roots to keep them increasing, but care should be taken not to wet the young shoots, for if they get wet they will be very apt to rot. Those that are growing should be placed at the warmest end of the house.

Some Orchids are deciduous, losing their leaves after they have finished their growth. To this class belong the species of *Cyrtopodium, Barkeria, Cycnoches, Thunia alba, T. Bensoniæ,* and some of the *Dendrobiums,* with *Pleione maculata, P. Wallichiana, P. lagenaria,* and many others. These should be always so placed that they may have as much light and sun during their season of rest as possible. This is the only way to ripen their pseudobulbs, which causes them to grow stronger, and flower more freely. When at rest the previously named kinds require but very little water, but when those without pseudobulbs, *e. g., Vanda, Angræcum, Aerides, Saccolabium,* and *Phalænopsis* are at rest, they should never be allowed to get too dry at the roots; the moss about them should always be kept a little damp, for the stems and leaves are very apt to shrivel if kept too dry, and this often causes them to lose their bottom leaves. Moreover, they require but a short season of rest. Those which are growing on blocks will require more water than those which are in pots or baskets, and they should be watered about twice or three times a-week if the weather be fine, just to keep them moist, but in dull weather they will not require it so often. Water should be poured over the paths and walks every fine morning, with a view to create a moist atmosphere, but the moisture in the house must be regulated according to the weather outside—a very important point to be attended to. If the weather be dull outside, the house inside must be kept rather dry. The glass and roof should always be perfectly clean, so that the

plants at this season may have full light and sun. It is my practice, as soon as the season of rest commences, to wash every piece of glass in the house, and also the woodwork.

TREATMENT OF NEWLY-IMPORTED PLANTS.

WHEN unpacked these should have every leaf and bulb sponged over, and all the decayed parts removed. There are many insects that harbour about them, such as the cockroach, and different kinds of scale, which are great pests. When clean they should be laid on dry moss and placed in some part of the Orchid house, where they are shaded from the sun. After a week or two, pot them, or put them on blocks. Water must be given very sparingly at first, as it is liable to rot them; too much of either light, heat, or moisture at first, is very injurious. The moss or peat should be gradually moistened, and when they begin to grow and make roots, they should be potted, or put on blocks or in baskets, but care should be taken not to have the pots too large, over-potting being dangerous.

As soon as the plants begin to grow, those which come from the hotter parts of India should be put at the warmest end of the house, but they should not have too much moisture when first starting into growth: those which come from the more temperate regions should be kept in the coolest part of the house, and they should not be allowed to stand under drip, as this frequently rots the young shoots as soon as they appear. Such plants as the species of *Vanda*, *Saccolabium*, *Aerides*, *Angræcum*, *Phalænopsis*, &c., I place so that the heart or crown hangs downwards, in order that no water may lodge

about them. They should hang for about a fortnight, and may afterwards be put on blocks or baskets with moss; but they must have but little water until they begin to grow, and make new roots, after which they may be treated in the same manner as established plants. This is much the safest mode of treating these valuable Orchids on their first arrival in this country.

TREATMENT OF PLANTS IN BLOOM.

THERE are many Orchids that may be removed when in flower to a much cooler house than that in which they are grown, or even to a warm sitting-room. The advantage of keeping the plants during their period of flowering in a cool and dry atmosphere, rather than, as is frequently the case, in a hot and moist house, is, that in the former case the flowers last much longer than they do when retained in the warmer and moister atmosphere. Perhaps there are not many cultivators who have studied this point more than myself, and I have never found the plants to be injured by this treatment. Some imagine that if they are put in a cool place they will suffer damage; but this has not occurred in my experience. During the time they are in a room, the temperature should not be below 50° at night; the room should be kept quite dry; and before they are removed from the stove they should be put at the coolest end of it; or if there are two houses, those that are in the hottest should be moved to the coolest for a few days before being taken into the room, and they should be allowed to get nearly dry, and should receive but very little water—only enough to keep the roots moist.

The flowers should not in any case be wetted. This is a very important point.

The following are a few of those which I have tried in a sitting-room during the months of May, June, July, and August. I have kept *Saccolabium guttatum* in this way for five weeks, and *Aerides affine* for the same time. *Aerides odoratum*, *A. roseum*, and some of the *Dendrobiums*, as *nobile* and *cærulescens*, I have kept in a room for four or five weeks. *Dendrobium moniliforme*, *D. macrophyllum*, *D. pulchellum*, and *D. Ruckeri*, last a much longer time in bloom if they are kept cool than if in a high temperature. Various species of *Brassia*, *Oncidium*, *Epidendrum*, *Odontoglossum*, *Cyrtochilum*, *Trichopilia*, and *Maxillaria*, with *Lycaste Skinneri*, *L. aromatica*, *L. cruenta*, *Aspasia lunata*, and all the *Cattleyas*, succeed well in a cool room or house, and their flowers keep fresh for a much longer time. I have kept *Lælia majalis* in a cool room for four or five weeks, and *L. flava*, under similar circumstances, will also keep a much longer time in blossom than in the warm house. When the flowers begin to fade, the plants should be removed to the stove, where they may be placed in the coolest end, with plenty of shade; they should be kept in this position for about ten days, for if they are at once exposed to the sun they are very apt to become scorched.

POTTING EPIPHYTAL ORCHIDS.

WHEN the season of rest is over, many Orchids will require re-potting, but in my practice I have not confined myself to that time only. No season can absolutely be determined on as the proper one for this opera-

tion. The months of February and March are very suitable for potting some of them—that is after the resting season. Those that do not require potting should be top-dressed with good fibrous peat and moss, the old soil being removed from the surface without breaking the roots of the plants. This operation affords the means of getting rid of many insects which harbour in the old soil. The pots should be thoroughly cleansed from the mould, moss, and dirt too often seen covering those in which Orchids are growing. Previously to potting the plants they should not receive any water for four or five days. Some species should be potted at a somewhat later period, viz., just as they begin to grow. All the species of *Phajus*, *Calanthe*, *Dendrobium*, *Stanhopea*, *Cyrtopodium*, *Brassia*, *Miltonia*, *Sobralia*, *Bletia*, *Oncidium*, and many others, require this treatment; whilst those of *Lælia*, *Cattleya*, *Saccolabium*, *Aerides*, *Vanda*, and similar plants, should be potted just before the commencement of their growing season.

The chief point to be attended to in all potting is that the pots should be well drained, the best material for drainage being potsherds or charcoal. Before potting, be particular to have the pots perfectly clean and dry, inside and out, and the broken potsherds should be washed. After this is done, select a pot in accordance with the size of the plant, but do not give too much pot room. Some plants require shifting once a year, while it may not be necessary to shift others oftener than once in two or three years; but if a plant becomes sickly or soddened with wet, the best way to bring it back into a healthy state is to turn it out of the pot or basket, and wash the roots carefully with some clean tepid water, cutting off such of them as are dead; and then to re-pot it, not giving it much water till it begins to make fresh roots. The best pots are those in ordinary use. Some

employ slate pots, but they are not, in my opinion, so good for Orchids as those made of clay.

In preparing the pots for large plants a small pot should be turned upside down in the bottom of the larger one, which should then be filled in with potsherds or charcoal broken up into pieces about two inches square for large plants—smaller plants not having the pieces so large; then introduce potsherds till within three or four inches of the rim, and afterwards put on a layer of moss to prevent the peat from impeding the drainage, and to allow the water to pass off quickly. This is of great importance, for if not attended to, the water will become stagnant, and the soil sodden, which is fatal to the health of the plant. The grand point to be observed in the successful culture of Orchids, as well as most other plants, is good drainage; without that it is hopeless to try to keep the plants long in a healthy condition.

The best material for potting the different kinds of Epiphytes in, is good rough fibrous peat and sphagnum moss; after the layer of moss is applied, fill up the pot with peat and live sphagnum moss mixed together, and bear in mind not to press the soil too close, for I consider too firm potting to be very injurious. The peat should be broken into lumps about the size of a hen's egg; and I always use broken potsherds or charcoal mixed with the peat. The plant should be set so as to be two or three inches above the rim of the pot, taking care to have the base of all the pseudobulbs above the soil; then put some peat and moss on the top of the roots so as to cover them, employing a few small pegs to keep the soil firmly on the pot. After the plants are potted fix a stick in the centre of each, to keep it firm. In shifting, carefully shake off all the old soil without injuring the roots. After potting be careful not to give too much water at first; but when the plants begin to make fresh roots they may have a good

supply. The best material for those in baskets is sphagnum and broken potsherds. The basket should suit the size of the plant; it should not be too large, for it will not last more than two or three years if made of wood, by which time, probably, the plant will require shifting into a larger one. There should be placed first a layer of moss at the bottom of the basket, then a few potsherds, and then the whole filled up with moss and potsherds mixed. Take the plants carefully out of the old basket, without breaking the roots, remove all the old moss, place the plant on the new material, about level with the top of the basket, fix a stick in the centre, to keep it firm, cover the roots neatly, and finish off by giving a gentle watering.

Those plants that require wood to grow upon should have live moss attached to the blocks, if by experience they are found to require it; some, however, do better on bare blocks, but they need more frequent waterings, as they are then almost entirely dependent on what is obtained from the atmosphere. In fastening them firmly on the blocks, use copper or galvanized iron nails, which are to be driven into the block, and then, with copper wire, secure the plants firmly to the wood. As soon as they make fresh roots they will cling to the block, and the wire may be taken away.

POTTING TERRESTRIAL ORCHIDS.

HESE require a stronger compost than the epiphytal kinds, but they do not need so much drainage. They should be potted just when they begin to grow, after the resting season. The compost I prefer to use for them is turfy loam chopped into pieces about the size of a

walnut, leaf mould or peat, and a little rotten cow or horse-dung; these should be all mixed well together. The plants require good-sized pots; put about two inches of drainage at the bottom, on that a layer of moss, then some rough peat, and finish with the compost just mentioned, on which place the plant so as to be about an inch below the rim of the pot, and then fill in with the compost. Water sparingly at first, but by the time the young growths are some six inches high they may have a good supply.

MODE OF PRODUCING BACK GROWTHS.

THERE are many of our Orchids that grow on year after year, and yet produce only one flowering bulb annually; but some of the kinds, if the plants are cut, will produce back shoots or breaks, increasing the number of blooming growths, and thus soon make fine specimens. This is the way to produce such plants as are seen every year at the London and provincial exhibitions. Some plants, such as *Cattleyas*, may be more readily treated in this way than others. The operation is performed in this way:—Take a plant that has back bulbs, some three or four it may be; cut the plant in two between the bulbs, not otherwise disturbing it, but let the bulbs remain in the same place. The best time to cut all Orchids is during their season of rest, or just as they are beginning to grow. All other Orchids that have pseudobulbs may be treated in the same way, if it be desirable to increase them; but bear in mind that no Orchid should be cut except when in vigorous health.

WATERING ORCHIDS.

THIS should be done with great care, especially in the case of plants just starting into growth, for if watered too profusely, the young shoots are apt to be affected by the moisture of the house, and become liable to what is termed damping off. Whilst, therefore, the shoots are young, only enough water should be given to keep the moss or peat moist in which the plants are growing. As they advance in growth, more may be given; and when the pseudobulbs are about half grown, they may have a good supply at the roots. This, however, will greatly depend upon how the plants are potted: if potted according to the directions laid down in this book the water will pass away quickly, which is very essential to the well-being of the plants. I have known Orchid growers try many kinds of potting material, but have never seen any to succeed better than rough fibrous peat and sphagnum moss, and by using these two materials as recommended, there is less liability of injury. Some growers use fine soil, mixed with sand and moss: this I consider bad for epiphytal Orchids, because it soon gets soddened round the roots—a condition exceedingly injurious to this class of plants, which are not subjects to be tampered with. When plants are potted in this fine soil they require less water, and will also need the soil to be frequently renewed, but this system I entirely set myself against.

My practice is to shut up the Orchid house in the spring of the year about three o'clock; and in May, June, July, August, and September, I shut it up about an hour later, when the heat of the sun is on the decline. I then usually give a gentle syringing with water as nearly as may be of the same

temperature as that of the house. In fine weather, the temperature from sun heat will rise frequently as high as 95°, or even more; but I have never observed any injury to befall the plants in consequence of this heat, so long as the house was saturated with moisture. The house should be dried up once a day, if possible, by means of ventilation. In syringing be careful not to wet the young shoots too much. The syringe should be furnished with a fine rose, so as to cause the water to fall on the plants in imitation of a gentle shower of small rain; but this syringing should only be done after a hot sunny day, and should never be carried to excess, for I have seen the ill effects of that practice with many Orchid growers. The practice is indeed very dangerous, and growers often wonder at their plants not looking so well, when it is entirely due to over-syringing. Nevertheless water, judiciously applied, is one of the most important items in the culture of these valuable plants. Those plants which are growing on blocks of wood should be syringed twice a day in the summer time; and I also find it beneficial, during the growing season, to take the blocks down about twice or three times in a week, and dip them in water till the wood and moss are thoroughly soaked. Plants in baskets should likewise be taken down and examined, and if they are dry, they should also be soaked in the water. This is a good mode of getting rid of many hurtful insects that harbour in the moss, such as the wood-louse and the cockroach, which, when the moss is plunged and kept for awhile under water, will come to the top, and then may be easily killed.

Rain or pond water is the best, but if this cannot be obtained, and water from a spring must be used, it should be well exposed to the influence of the atmosphere before using; it should also be allowed to stand in the house for a considerable time, previously to its being required for the plants,

so that it may become warmed to about the same temperature as the atmosphere in which it is to be used.

Slate cisterns, for collecting the rain-water which falls on the roof, are very important. Cisterns on each side over the hot-water pipes keep the water at the same temperature as that of the house. If there is not room for the slate cistern on the pipes, have one sunk in the middle of the house. Cement tanks under the centre table answer the same purpose, and should have a hot-water pipe run through them, so as to make the water of the same temperature as the house, which is very essential for the growth of the plants.

PROPAGATION OF ORCHIDS.

THERE are different modes of propagating the various kinds of Orchids. Some are easily increased by dividing them into pieces, or by cutting the old pseudobulbs from the plants after the latter have done blooming: such plants as *Dendrobiums* are increased in this way. The best time for dividing the plants is just as they begin to grow, or when they are at rest; they should be cut through with a sharp knife between the pseudobulbs, being careful not to harm the roots; and each piece should have some roots attached to it. After they are cut through, they should be put into some shady part of the house, without receiving much water at the roots till they have begun to grow and make fresh ones; then they may be parted, potted, and have the regular supply. *Dendrobium nobile*, *D. Pierardi*, *D. pulchellum*, *D. macrophyllum*, *D. Devonianum*, *D. Falconeri*, *D. Wardianum*, and sorts of similar habit, are easily propagated.

This is effected by bending the old pseudobulbs round the basket or pots in which they are growing, or by cutting the old flowering bulbs away from the plant, and laying them on some damp moss in a shady and warm part of the house, with a good supply of moisture. In either case, they will break and make roots and new shoots, after which they may be potted or put in baskets. Such kinds as *D. Jenkinsii*, *D. aggregatum*, *D. formosum*, *D. speciosum*, *D. densiflorum*, and similar growing sorts, are increased by simply dividing the plants.

The species of *Aerides*, *Vanda*, *Angræcum*, *Saccolabium*, *Camarotis*, *Renanthera*, and similar growing kinds, are all propagated by cutting the tops off the plant just below the first root, or by taking the young growths from the bottom of the plant. After they have formed roots they should be cut off with a sharp knife, and afterwards put on blocks or in baskets with some sphagnum moss, and kept in a warm and damp part of the house, without receiving much water till they have begun to grow, when they may have the usual supply. *Odontoglossums*, *Oncidiums*, *Zygopetalums*, *Sobralias*, *Trichopilias*, *Stanhopeas*, *Schomburgkias*, *Peristerias*, *Mormodes*, *Miltonias*, *Lycastes*, *Leptotes*, *Lælias*, *Galeandras*, *Epidendrums*, *Cyrtopodiums*, *Cyrtochilums*, *Cymbidiums*, *Cycnoches*, *Coryanthes*, *Cœlogynes*, *Cattleyas*, *Calanthes*, *Brassias*, *Bletias*, and *Barkerias*, are all propagated by dividing them into pieces, each having a portion of roots attached to it, and a young bulb or growing point.

Thunia alba and *T. Bensoniæ* are very easily increased. The best way is to cut the old pseudobulbs off after the young ones have begun to flower, that is, just before the plant has made its growth. The pseudobulbs should be cut into pieces about six inches long, and then put into a pot in some silver sand, with a bell-glass over them, till they have struck root; they should then be potted in some fibrous peat and moss,

and should have good drainage and a liberal supply of water in the growing season.

Some of the *Epidendrums*, such as *E. cinnabarinum* and *E. crassifolium*, which form plants on the tops of the old flower stalks, are easily propagated; they should be left till they have made their growth, and then be cut off and potted, when they will soon make good plants. Some *Dendrobiums* will also form plants on the tops of the old pseudobulbs, and they should be treated in the same way.

SEEDLING ORCHIDS.

FEW Orchids have as yet been raised from seed in this country; indeed, until within the last few years, cultivators had not been fortunate in raising Orchids from seed at all; but although at the present time the number is not great, we are nevertheless every day becoming more familiar with seedling varieties and hybrids which have been raised in English gardens. To Mr. Dominy is due the credit of producing some very beautiful hybrid forms of this order, which are now in cultivation. Several others are now also exercising their talents in the same direction, and there is unquestionably a large field open for all who take an interest in hybridising this singular and beautiful tribe of plants. Some time ago a gentleman said to me that he should like to be in a country where the Orchids grew in a wild state, in order that he might have a chance of hybridising them; his ideas were, that something really good might be obtained, and no doubt he was right, for considering how seldom it is that we flower two Orchids alike, it may be concluded that many of our imported Orchids are

natural hybrids or seminal variations. I have seen at least two dozen varieties of *Cattleya Mossiæ* in bloom at one time; some had white petals and rich crimson lip, others rose-coloured petals and yellow lip, and each differed more or less from the others. In fact, nearly all species of Orchids have varieties. Four flowers taken from four different plants of *Phalænopsis amabilis* were brought me by a gentleman, and no two of them were exactly alike. The same may be said of *Phalænopsis Schilleriana*. I have seen many plants of this in bloom, varying much in the colour of the flower and in the shape and markings of the leaf; all were, however, handsome. In a wild state, varieties appear to be unlimited, crossed and recrossed, as they doubtless are, by insects. Who, for instance, would have thought, a few years ago, of receiving so splendid an importation as *Phalænopsis Schilleriana*, beautiful not only in blossom but in foliage? And we are told there exists a still finer species, with scarlet flowers! Let us hope it will soon be added to our collections; what a contrast it would make with the white and mauve coloured kinds now in cultivation! Mr. Dominy has succeeded in raising some pretty varieties of *Cattleya*, *Calanthe*, *Cypripedium*, *Goodyera*, &c. I trust he may persevere in the good work, and produce something new in other genera. Many kinds seed freely if the flowers are set, producing many seeds in a pod.

The seed, having been gathered as soon as ripe, should be sown when ripe; but it requires great care, as it is not so easy to raise as that of many other kinds of plants. Some of the kinds are a long time in germinating; I have known Orchid seeds to lie twelve months before they made their appearance. It is, however, highly interesting to watch their gradual development, from the tiny germ to the first small pseudobulbs, and so on up to the flowering state. The best place to sow the seed is on the top of an Orchid pot, where the seeds wil

not get disturbed, and where the peat or moss is in a rough state; do not cover the seed, but give a little water with a fine-rosed pot, just to settle it. The rough blocks of wood on which another plant is growing also afford a capital situation to sow upon, but the surface should always be kept a little moist. After germination, those which were sown on pots should be placed in small pots quite close to the inside edge, and when the plants get strong enough, they may be potted singly in the material already recommended, or be placed on blocks. In potting and taking them up, care must be taken not to break the roots.

One of the surest roads to success in hybridising is to select only fine species or varieties for experiment. It is possible, indeed, there may exist in a flower of inferior merit some quality which would induce the operator to undertake its improvement, or endeavour to transfer the desired feature to some more favoured kind. It is, therefore, highly desirable that many should begin to raise hybrids, not only with the view of obtaining finer flowers than we already possess—though that would be a real acquisition; but for the additional purpose of raising sorts that might succeed in cooler houses. *Odontoglossum grande* and many others, for instance, do better in a cool house than in a warm one; how desirable to communicate this quality to others. *Cypripedium insigne* will thrive well in a greenhouse; if, then, we could cross this with some of the other kinds, such as *C. superbiens*, *C. hirsutissimum*, *C. Lowii*, or *C. barbatum superbum*, something good might be the result. There are also several hardy *Cypripediums*, such as *C. macranthum*, *C. pubescens*, and *C. spectabile*, which might be induced to play an important part in the operation. Since these remarks were first published, several hybrid *Cypripediums* have flowered in the establishment of Messrs. Veitch, and have fully borne out my pre-

dictions. *Phajus grandifolius* and *P. Wallichii* are likewise two noble plants for winter decoration, which do well in a warm greenhouse, and may probably be the means of producing some very ornamental plants, if crossed with various *Calanthes*. I am glad to be able to state that since the publication of the second edition of this *Manual*, numerous Orchid growers have been turning their attention to this subject, and many of them have succeeded in raising seedlings, which I trust may produce something startling before long. *Lycastes* thrive admirably in a cool-house; as, for instance, *L. Skinneri*, which is one of the finest. Many splendid varieties of this are now cultivated. This plant is reported in the *Gardeners' Chronicle* to have been kept in a room in flower for seven weeks—a fact which shows what might be done with these fine plants in a cool-house. I myself have had plants of this *Lycaste* all the winter in a greenhouse, where they have flowered in great abundance, as many as from thirty to fifty blossoms being open at one time. Indeed, I exhibited a plant of it at one of the Regent's Park spring shows with as many blossoms on it as I have just mentioned, on which occasion a medal was awarded for its magnificent flowers and colour. Particular care must be taken, however, to keep the flowers dry when in a cool-house, or else they are apt to become spotted.

"*Lycaste Skinneri*," says the *Gardeners' Chronicle*, "seems about to have as great a future as the Tulip. Already something like a dozen varieties of colour are known among its exquisitely beautiful flowers, and we can entertain no doubt that it will break into plenty more, especially if recourse is had to hybridising. From deep rose to a skin only less white than the Hawthorn we have a complete set of transitions, and this is a plant conspicuous for its fine broad foliage, and glorious in its ample floral garments." But since this paragraph

was written, the cultivation of this beautiful winter flowering plant has largely increased, and the varieties have become very numerous.

It is not, however, wholly on account of its disposition to reward us by an endless variety of colour, and perhaps form, that we wish to draw attention to *Lycaste Skinneri*, but because of all tropical Orchids it is one of the hardiest in constitution and most easy to cultivate. This has been very decisively shown by some experiments of the late Mr. Skinner, to whose untiring energy we English owe this and many other treasures. In a note received from him, he writes as follows:—

"On the 2nd February, 1861, I received from Mr. Veitch a fine specimen with seven flower spikes all out, and took it to Hillingdon Cottage, placed it on the drawing-room table in an ornamental pot, and gave it every three days or so about four tablespoonfuls of water, occasionally wiping the leaves with a wet sponge when the dust got on them. There this plant stood throughout the severe weather we had—a fire in the room only during the afternoons and evenings, and on some days none at all. It never showed the least decay until the 16th of May, when it was for some purpose or other put into the greenhouse, and our gardener sprinkled water over it along with the other plants. Next morning I was shocked to see the flowers all with brown spots and withering. On the 18th May I took it back to Mr. Veitch, still in full bloom (seven spikes), to bear testimony to its condition, and it lasted, though then much injured, a week on the stand by the seed-room in their place. This experiment induced me to try again. On the 18th December, 1861, I brought down to this place two fine plants of the *Lycaste*, and two plants of *Barkeria Skinneri*, both in full bloom. Having been absent (with the exception of three days in January) since, I have had no control over them, but my

sister followed the same plan as at Hillingdon, only with the *Barkerias*, which are attached to blocks, dipping the whole block into water for a few minutes every four or five days, according as we have much or little sun; and as the plants are now before me, I give you their condition. One of the *Barkerias* is as perfect as the day I brought it here; the other has all gone off within the last few days. One *Lycaste* is perfect, and as beautiful as the day I brought it here; the other has *lost* one flower, I fear, by some accident, the other flower still good, but evidently a little 'shady;' this plant has two flower stems coming on, and would bloom in a fortnight if we pushed them by more moisture. I expect frost has got on it after watering, for it stands close to the window in the drawing-room, and this room, though smaller, is similarly treated to the one at Hillingdon—fires in the afternoon and evenings, with a southern aspect. What a treat to me is this, and I think you should know it, for people have said—'I love Orchids, but hate the stew-pans one has to view them in.'

"It is clear that for *Lycastes* and *Barkerias* 'stew-pans' may be dispensed with. Plenty of Orchids like these are to be found in our gardens, brought from the Highlands of Mexico and from Central America. It is also probable that mountain species of India, such as the delicious *Cœlogynes*, will thrive under the same treatment, and, if so, one more class of enjoyments is provided for the lovers of flowers.

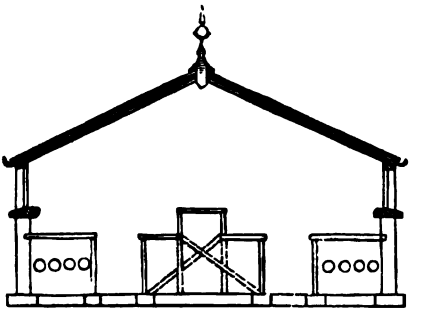
"Surely this is news worth telegraphing through the whole horticultural world! What a charm for a sick-room! What a pet for the poor invalid who has nothing to love except her flowers! Imagine the pleasure of watching the buds as they form, visibly enlarging from day to day, until they reach the slow unfolding of the perfect blossom, and then the delight at seeing it some morning, stimulated by even a winter's sun, suddenly throwing back its green cloak, and displaying the

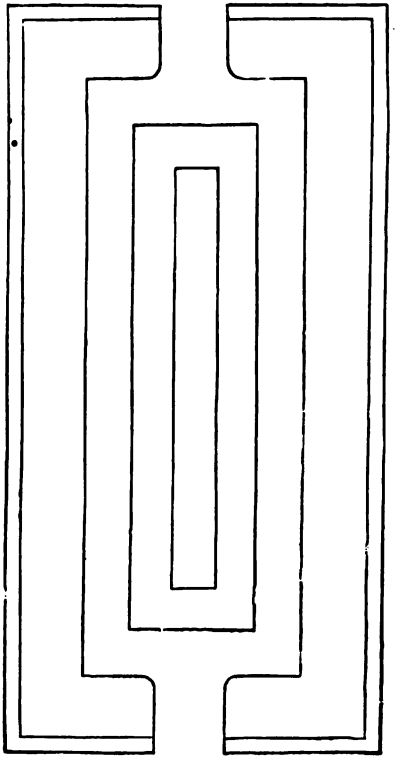
wondrous beauty of its richly tinted lining. It is almost worth being ill to enjoy such a scene."

Encouragement like this must surely add new life and vigour to Orchid growing. I hope, therefore, that many may be induced to try their skill. The great secret is robust growth in summer, when there is plenty of heat in the greenhouses; but for further and particular instruction, see the chapter on the cultivation of the *Lycaste*, and also that on the treatment of plants in flower.

ORCHID HOUSES.

IT is not absolutely necessary to build a house for the cultivation of Orchids, for many people grow them most luxuriantly in their pine stoves, and in houses principally devoted to flowering and ornamental-leaved plants; and where only a few plants exist, such a plan is by no means objectionable, but where a large collection is to be cared for, it is quite essential that a house be specially set apart for them, and in my opinion the best houses are those with span roofs facing east and west. A ground plan and end section of such a house is here given. The structure should not be more than ten or eleven feet high in the centre, seventeen or eighteen feet wide, and about a hundred feet long, with two glass divisions to separate it into three houses—one for plants that come from the East Indies, which ought to be next the boiler, the second one for those that come from Brazil and part of Mexico, and the third for New Grenada and Peruvian species. There should be upright sashes on both sides of the house, with glass from twelve to fifteen inches high, but not made to open. Many





Orchid growers object to side sashes, and generally recommend brickwork up to the spring of the roof: but that is not, in my opinion, the best plan; on the contrary, I would advise any one about to build an Orchid house to have upright sashes on both sides and at each end. From experience I have found that Orchids do best with abundance of light, which is the only way to get good strong ripe pseudobulbs fit for flowering. Small houses are best. In different parts of the country there exist large houses, but in no instance have I seen plants growing well in them; such houses take a great fire to keep them at the proper night temperature, and after all, they seem ill adapted to the wants of the plants. I would advise all large Orchid houses to be pulled down or turned to other purposes, and their places to be occupied by small ones; the expense of the operation would soon be saved in the reduction that would take place in the cost of pipe and fuel. I have used single roofs for twenty-seven years, and have always found them to answer well, but of late the double-roofed houses have come into use with many Orchid growers; but in no one instance has any improvement in the health of the plants been visible to me, indeed the contrary rather; and unless I can see that they are a decided improvement I shall advise all young growers to keep to the single roof. I never have believed in the double-roofed house, and there must be a real improvement before I recommend what is not likely to surpass the single roof. It appears strange to me to see growers of these valuable plants jump at such novelties before they have been well tried on a small scale by some one who understands the treatment of this race of plants.

Since the above remarks upon double-roofed houses appeared in the third edition of this work, many of the strongest advocates of the system have taken off the extra roofs, and reverted to the old plan, having found by experi-

ence (and that dearly bought in some cases) that the above remarks are perfectly correct.

The houses at this place are of the size recommended above, and no Orchid houses could answer better. They have been built several years, and are well worth inspection. They afford plenty of room for the plants to show themselves to advantage, and they have likewise roomy paths, which is a great recommendation; for nothing is more unpleasant than not being able to inspect the plants with comfort. The inside dimensions of my houses are forty-five feet long, eleven feet high in the centre, and eighteen feet in width; there is a table six feet wide up the centre, and a path all round three feet wide; there are side-tables three feet wide, covered with slate. The floor is concreted, three inches thick, and then covered with Portland cement, which forms a capital surface. The whole is heated by hot water, distributed in four rows of four-inch pipes on each side, and having valves to stop or turn on the water as required. On both sides of the Orchid house are upright sashes, as recommended above. It is glazed in the manner recommended in the chapter on glazing, and it has three ventilators on each side in the brickwork, close to the hot-water pipes, and one at the end over the doorway. There are four small top-sashes, two on either side, which open with hinges, and are furnished with ropes inside to draw them up and down, and these I find very desirable to let out the over-heated air. These ventilators have been in use for several years, and are found very useful; for if cold wind blows from the one side the other can be opened, so that the chilly air does not blow on the plants, which is very injurious.

Complaints have been frequently raised, especially by ladies, against Orchids and Orchid houses, on account of the excessive heat and moisture attending them, and which quite precludes

them from enjoying their beautiful flowers. This complaint, however, has now lost much of its force, because we grow Orchids much cooler; yet in the case of the East Indian house there is still much truth in it. The evil is one, nevertheless, which can easily be remedied. To that end a small house should be erected, or a small division at the end of the Orchid houses assigned to Orchids in bloom, or a portion of the conservatory should be enclosed. Here, with some ferns and a few other ornamental-leaved plants as a background, the blooming Orchids should be placed, and here they may be enjoyed to the full, since the place may be kept quite cool, so that while the most delicate constitution will receive no injury, the blossoms will remain much longer in perfection. This system is adopted by many cultivators of Orchids, and is a source of great pleasure to them. In this way the beauties of such plants as *Calanthe vestita*, *Limatodes rosea*, the *Pleiones* and plants like them, which are destitute of leaves at the time of flowering, is greatly enhanced, as the ferns and other plants can be made to hide the deficiency; and in summer the Orchids in flower will retain their full beauty for a much longer time, if kept well shaded and cool. This system of decoration is well carried out by Mr. Hubbersty, gardener to O. Wrigley, Esq., of Bury. A long span-roofed house, which forms an entrance to the other houses, is devoted to this purpose; it has a central path, with a table on each side, and the blooming Orchids being brought here and intermixed with ferns, flowering and ornamental-leaved *Begonias*, *Poinsettias*, *Euphorbias*, and many other plants, according to the season, the effect produced is charming.

HEATING ORCHID HOUSES.

FOR effecting this, nothing is better than a hot-water apparatus. I recommend four-inch pipes, and to put in plenty of piping rather than too little. There is nothing saved by economy of that kind, and it is far better to spend a little more money for material at first, than have to make additions afterwards. By having plenty of pipe a less rapid combustion is required, which is better for the plants, and the expense is saved in fuel in a very short time. I should, therefore, advise four rows of pipes for the East Indian house, three for the Brazilian, and two for the house devoted to those species from New Grenada, Peru, and some parts of Mexico; by having four pipes for the plants requiring most heat, one does not require to drive the fire so much on a frosty night. I never raise steam from the pipes; for plenty of moisture can be obtained without it, by pouring water on the tables and paths, which I consider much better than so much steam discharged on the plants direct from rusty pipes. At the same time, I do not by any means condemn the use of evaporating troughs during the summer months, for these will diffuse throughout the house a most congenial moisture, highly beneficial to the growth of these plants, and the effects of which are very different to that of scalding steam.

The boiler should be placed outside of the house, and not set underneath, which is a very bad system. I remember going to see a collection of Orchids where the boiler was so situated. The gentleman said he had put it there to economise heat, and the plants were growing very finely at the time. Upon my remarking that I should be afraid of smoke getting

into the house; he replied, "There is no fear of that, for I have got the boiler well covered over." Only a few months afterwards I went to see the same collection, and found my fears were realised; the smoke had got into the house, and had spoilt many of the plants. This is merely mentioned to show the ill effects of a boiler being set so that smoke can get into the house. When outside, there is no fear of such a disaster.

Hot water boilers are now made of shapes and patterns without end, and as most cultivators have some predilection in this matter, I leave them to make their own selection. There are, however, many things to be thought of before deciding this question. If the locality is such as to render it impracticable to dig far down into the ground before reaching water, or to prevent a drain being put below the boiler, then the upright form of boiler is neither suitable nor safe; for in cases of flood, during winter, the water may rise and put out the fire, unless the stoke-hole is made water-tight, which may be a troublesome and expensive process. I would, however, by no means depreciate these boilers. Then we have cannon boilers, tubular boilers, common saddle boilers, terminal saddle boilers, tubular arched saddle boilers, double L saddle boilers, improved tubular boilers, convolute boilers, the duplex compensating boiler, and boilers that require no setting, the makers of all being able to give what are to them satisfactory reasons why the particular form they adopt is the best. That we have this diversity amongst boilers is no doubt a great advantage, for one that may work admirably in one place, may not, through some peculiarity of place or position, be so thoroughly satisfactory in another. Moreover, the fuel most readily available in one place, and which may suit one class of boiler, may not be so readily obtained in another place, and therefore those who are so situated will naturally have recourse to a boiler which will consume the fuel which they can obtain for heating it.

VENTILATION OF ORCHID HOUSES.

THIS is of great importance; for if cold air is allowed to pass among the plants they will not thrive, and all care which has previously been bestowed on them will be in vain. Means of ventilation should therefore be provided near the ground, close to the hot-water pipes, in order that the air may be warmed on entering the house; and also by underground pipes, so that in cold weather a current of pure air may be maintained. This can be accomplished by laying drain-pipes from the outside under the foundation to the inside under the hot-water pipes, so that the air is warmed immediately upon entering the house by passing over the heated surface. In the houses here, there are three ventilators in the brickwork opposite the pipes on each side to each house. The ventilating shutters are made of wood, about two feet long, and one foot wide; sliding slate ventilators answer perhaps better. There should be one glass ventilator at the south end, near the roof, and one at the north end. We have also four small ventilators near the top of the roof, two on each side, on hinges, opening from the inside with cords, to let out the top-heat, which we have found very essential to the well-being of the plants.

SHADING.

EVERY Orchid house requires to be shaded, although we are often told the practice is wrong; but as the plants would soon be destroyed if the burning rays of the sun were allowed to shine upon them when grown

under glass, the use of blinds in summer is quite necessary to successful cultivation. It is possible, however, to carry shading to excess; all such excesses must, however, be studiously avoided. The best shading material is canvas. There should be blinds on each side, with a strong lath at the top to nail the canvas to, and a roller at the bottom. The canvas must be nailed to the roller, but care should be taken in doing this that the awning will roll up regularly from bottom to top. I never allow the canvas to be down except when the sun is powerful, for I find that too much shade is injurious to most kinds of Orchids. The awning will also be useful in the winter season for covering the house during a frosty night, being a great protection to those plants that are near the glass. It is advisable to have a covering on the top of the house for the protection of the canvas when rolled up, in order to keep it from wet.

GLAZING ORCHID HOUSES.

HE laps in the houses already referred to are very close; the squares of glass in the roof are two feet six inches long by nine inches in breadth; those in the upright sashes at the sides are fourteen inches long by nine inches wide. Twenty-one oz. glass is best, not being easily broken. I remember seeing an Orchid house much injured after a hail storm, a large portion of its valuable contents being nearly spoiled. The glass used in this instance was only sixteen oz., whereas, if it had been twenty-one oz., it would most likely have withstood the storm. I therefore recommend twenty-one oz. glass, or even a heavier kind, as

not being likely to get broken by cleaning or otherwise. Too large squares are bad, as they are apt to get broken by frost. The upright glass at the sides ought to be of the size stated above, to correspond with that in the roof and also in the ends and the door. The sash bars should have a small groove down them to carry the condensed moisture to the bottom, in order to prevent it from dripping on to the plants; even small pieces of zinc nailed to the bars serve to form a sort of gutter to carry off this moisture, and thus prevent drip.

TREATMENT OF PLANTS PREVIOUSLY TO BEING TAKEN TO PUBLIC EXHIBITIONS.

THERE are many cultivators of Orchids who object to send their plants to a public exhibition solely because they are afraid that they will receive injury; but these fears are quite groundless if a moderate degree of care is exercised. Having myself been an exhibitor of these plants for twenty-six years, I have had ample opportunity to form a practical opinion, and to the best of my belief I never had a plant injured by exposure at a flower show. That some valuable Orchids have been damaged I know full well, but the fault has been in the want of due care in their preparation.

It is my practice to move the plants to a cool dry house or room for a few days previous to the show. If the plants are growing in the hottest house, I move them to the cooler one. During this time they should be allowed only just enough water to keep them slightly moist. When it is probable that the plants will come into blossom earlier than is wished, the time of flowering may be successfully retarded by taking them

to a cooler part of the house, or even putting them in a greenhouse, keeping them slightly shaded during the brightest part of the day. *Dendrobiums* are very easily thus retarded, if they are wanted to bloom later in the season. *Dendrobium nobile*, *D. pulchellum*, *D. macrophyllum*, *D. densiflorum*, *D. Farmeri*, and *D. Pierardi latifolium*, generally bloom during winter, but I have kept them back until June; and by having a succession of plants, the Orchid house may be gay with *Dendrobiums* from January to June. Nearly all the *Dendrobiums* will bear cool treatment while at rest, and all can be kept for late flowering. To insure this, place them in a warm greenhouse and give but little water, in fact, only just enough to keep them from shrivelling; under this treatment the temperature should not fall lower than 40°, and the stems must be kept dry, or the flower buds are apt to rot. They should be shaded from the sun, so that the flower buds may not be excited. When the plants are wanted to flower they should be removed to the Orchid house, and still kept shaded from the sun. *Phajus Wallichii* and *P. grandifolius* may be kept back in the same way as the *Dendrobiums*.

PACKING ORCHIDS FOR CONVEYANCE TO EXHIBITIONS.

IN transporting Orchidaceous plants to exhibitions they require great care in packing and tying, for many are very tender. Their flowers in many instances are large and waxy, and some of them require more packing than others. It is extremely annoying to have a fine specimen plant spoiled, during its journey to the place of exhibition, in consequence of its not being carefully packed, when with a

little care it would have travelled safely to any distance. In fact distance is of very little consequence, if the packing is well done. This was proved in a most extraordinary manner in the spring of 1869, by Robert Warner, Esq., who sent upwards of fifty specimen Orchids, from his gardens at Broomfield, to the International Horticultural Exhibition at St. Petersburgh. These plants were carefully packed in close cases, and sent by rail the whole journey, saving the short run by steamer across the Channel, eight days being occupied in the transport. When unpacked and staged, they were in excellent condition, having suffered during the journey no more than they would have done in the houses at home. That these plants should travel to St. Petersburgh in such excellent condition, is undoubtedly the greatest feat in connection with horticultural exhibitions that has ever been accomplished, especially when it is stated that they were all large plants—amongst them *Phalænopsis Schilleriana* with a hundred expanded blossoms; *P. grandiflora*, with about half the number; *Vandas*, with numerous spikes; *Trichopilia crispa*, with a hundred open flowers; *Cattleyas*, *Dendrobiums*, *Odontoglossums*, *Cypripediums*, *Aerides*, and several other genera, the whole being profusely bloomed. A remarkable proof of what care will do with even the most delicate flowers was given in the case of the plant of *Odontoglossum Alexandræ* exhibited in this collection, which, after standing at the St. Petersburgh exhibition for a fortnight, was again packed up and exhibited three weeks later at the Royal Horticultural Society's Gardens at Kensington, with the loss of only one or two flowers.

I have had a good deal of this work to do, and a few hints on the subject to young beginners may be of practical use. Some kinds bear carrying much better than others. *Phajus Wallichii* and *P. grandifolius* are both bad plants for travelling,

if not well packed. I have seen fine plants brought to different flower shows with their flowers completely spoiled for want of careful packing, though I have shown *P. Wallichii* several years at the Chiswick and Regent's Park Exhibitions, and always managed to convey them without injury. In preparing them, put a strong stick to each flower spike; the sticks should be long enough to go into the earth, and remain firm; they should be placed at the back part of the flowers, and should stand one or two inches above the flower spike; some wadding should then be fastened round the stick, and the flower spike tied firmly to it, putting more wadding round every flower stalk, and tying each firmly to the flower spike. Begin at the top of the spike, and tie every flower separately, so that they do not touch one another. The leaves must not be allowed to rub against the flowers. On arriving at the end of their journey, untie them, remove the wadding, and tie them out in the proper form. In tying, care should be taken not to rub the flowers.

Saccolabiums and *Aerides* do not require so much packing. It is sufficient to put two or three sticks to each spike—one at each end, and one in the centre, if the spike be long, or two only if it is short. The stick, which should only be long enough to support the spikes in the drooping way in which they grow, should be fixed firmly in the basket or pot; a small piece of wadding should be placed on the top of the stick, and to which the spike should be firmly tied. This will be sufficient to ensure safety. The wadding should not be allowed to touch the top part of the flowers, as it will stick to them, and be very difficult to remove.

Vandas require more packing, their flowers being larger and further apart; place some wadding between each flower on the spike, then fix some sticks firmly in the basket or pot, and tie the spike to them, without letting the stick touch the flowers;

wadding should then be put in between the flowers to keep them separate.

Phalænopsis grandiflora and *P. amabilis* travel badly, and require much care. The best way is to set the plant in the bottom of a box, which must be long enough to allow the flower spike to lie at full length; wadding should then be placed underneath the flowers, which should lie flat on the wadding; another sheet of wadding should then be placed on the top of the flowers, in order to make them lie firm, although they may be treated in the same way as recommended for *Vandas*.

Dendrobiums in some cases only require a stick to each stem, fixed firmly in the pot, and which should be tied to it. This will serve for such as *D. nobile*, *D. macrophyllum*, *D. Devonianum*, *D. moniliforme*, and sorts with similar flowers. Those, however, that flower with pendulous racemes, such as *D. densiflorum*, *D. Farmeri*, and others growing in the same way, require three sticks; one to the stem, to which the latter should be firmly tied, and the other two to the flower spike, one at each end, in the same way as with the *Saccolabiums*.

Calanthes are bad travellers, especially *C. veratrifolia;* the delicate white flowers soon getting injured and discoloured if allowed to rub against each other; to avoid this, put a stick carefully to each spike.

Cattleyas require to be packed very carefully; their flowers should be tied so that they do not touch one another. The best method is to put a stick to each flowering bulb, tying it firmly, and a stick to each flower stalk, just below the flower, with a piece of wadding round the stalk; afterwards tie the stalks to the stick; neither the stick nor the leaves should be allowed to touch the flowers, or they will become bruised.

Oncidiums travel well; they only require a strong stick to

each flower spike, with a piece of wadding round the stick at the points where the ties come.

Sobralia macrantha is a bad plant to travel if not properly tied. There should be a strong stick to each flowering growth, which must be tied firmly; and also one to the flower stalk, with a piece of wadding close to the flower; then tie the stalk firmly to the stick, and allow nothing to rub against the flowers.

Peristeria elata should be treated in the same way as above recommended for *Phajus*.

Cypripediums require a small stick to each flower stalk. All the *Lycastes*, and other Orchids that flower in the same way, require similar support for their individual flowers, which, if kept separate, will travel safely without more trouble.

The best means of conveyance for Orchids is decidedly a spring van with a cover on the top. In placing the plants in the van, I always put some hay between each pot, to keep them firm and prevent their rubbing against each other; this, moreover, helps to retain the heat in the pots, and also prevents draughts from reaching them, and thus the roots are not subjected to any great check through change of temperature.

An opportunity occurs here to remark upon the paucity of Orchids at our great London exhibitions of the present day, as compared with former years. It is true several of the large contributors are dead, and their collections are dispersed; some few have relinquished their culture, and others have removed to a distance, but there still remains ample material in the numerous rich collections in the vicinity of the metropolis to again furnish a glorious bank of flowers, such as formerly greeted the eye at famous Chiswick and the Regent's Park Botanic Gardens on exhibition days; and I am fully persuaded

it is only from the want of encouragement in the matter of prizes, that we do not now see these gorgeous displays at our London shows. That such is the case, we have only to turn to the great Whit-week show at Manchester, and then we find a proof of the fact. There the prizes are good, and not onl do the cultivators in the immediate vicinity bring their plants, but some from a considerable distance can be seen staging their productions for competition against the celebrated growers of the "Cotton Metropolis;" indeed, the display made last year I never saw surpassed, if equalled, at any show. This may be readily imagined when I state that a double row of these plants alone extended a distance of over three hundred feet, and amongst them were many of the grandest *Lælias*, *Cattleyas*, *Vandas*, *Trichopilias*, *Odontoglossums*, and a host of other things it has ever been my lot to behold. Some may say that this only proves the love of gain to be the chief motive power; but this is a wrong conclusion to draw; for although gentlemen and gardeners do sometimes exhibit for the honour only, such cannot always be the case. Indeed, the cost of obtaining a proper conveyance, the packing, the transit, and the time occupied at the exhibitions, represents a considerable sum of money, and very few persons can be induced to incur the expenditure if the prize to be competed for does not cover the expense—neither is it reasonable of any Society to expect that they should do so.

ADVICE TO COLLECTORS OF ORCHIDS.

THERE are many different ways of importing Orchids to this country. I have seen some that have arrived in good condition, while others have been completely destroyed by not being properly prepared before starting. The

first and most important thing is to prepare them for their journey. The next most important matter, perhaps the most important, is to start them on their journey at the proper time. My opinion is, that the plants should be sent away from their native country during the dry season, which is when they are at rest. While inactive their leaves and pseudobulbs are thoroughly ripened and firm, and contain but little sap; whereas when they are growing, the foliage is necessarily tender, and in danger of being bruised, a circumstance which accelerates decay during the voyage. Another reason in favour of dormant importation is, that, if sent in a growing state, or just as they are starting into growth, the young shoots push out on the journey, and for want of light and air come weak and dwindling, very often dying outright as soon as exposed. I have seen many a fine mass of *Cattleya* with all the leading growths completely rotten, which, of course, greatly lessens the value of the plants as compared with those which arrive perfect, and are just ready to start into growth as soon as they get into a warm house. Plants which on arrival have pushing pseudobulbs are also apt to lose their leading eyes, an accident fatal to some Orchids, for many do not break well, if at all, from old bulbs.

The species of *Aerides*, *Saccolabium*, *Vanda*, *Angræcum*, and similar plants that have no fleshy bulbs to support, are best imported after they have become established on flat pieces of wood, so that they can be nailed to the sides of their travelling cases. I once received a consignment of Orchids from Manilla, including amongst other fine plants some beautiful examples of *Phalænopsis Schilleriana*, *P. rosea*, *P. amabilis*, *P. intermedia*, *Aerides quinquevulnerum*, and *Vanda violacea*, all established and sent off in the way just described; they had evidently been growing some time before starting for this country, for on arrival their roots adhered firmly to the

wood, and many of their leaves were as green as though they had been in an Orchid house instead of having made such a long sea voyage in a glass-topped case. One point of importance is to take care to well secure the plants to the sides of the cases; because, if allowed to roll or swing about, they get bruised and soon rot, which is very vexing after all the trouble and expense bestowed on importing them. In the case of the *Phalænopsis Schilleriana* just referred to, some of the pieces of wood had become loose, rolling about during the journey, which caused injuries. In such cases, if any leaves are bruised during the journey, the best way is to cut them off at once before decay begins; for if allowed to go on, there will be danger of the whole plant being destroyed. With the cases just alluded to, I received also a close box filled with *Phalænopsids* packed in the dry bark of trees, which is a very bad material for such tender-leaved plants; when I unpacked this box there was not a green leaf to be seen—the shaking of the rough material just named, during the long journey, had destroyed all the foliage. If these had been packed in very dry soft moss, they would most likely have travelled safely. I have also received plants in good condition from India in close boxes, packed in dry soft shavings, while on the other hand many are entirely spoiled in that way. The cause of failure I attribute to their not being packed in a proper state; the plants themselves, as well as the material employed, should be well dried before packing, and care should be taken to avoid bruises, which often prove fatal. *Cattleyas* and plants with similar pseudobulbs I have received in close boxes from Brazil, packed in dry shavings, and have found them, when opened, in good condition; but care had evidently been taken to pack them firmly in the boxes, so that they did not shake about on their journey.

The best time of year for receiving Orchids in this country

is, if possible, the spring, in order that they may have the summer before them to get established.

With *Anæctochili* the best way is to tie some moss round their roots and stems to keep them firm, leaving the foliage just above the moss, and they should occupy a small case by themselves. These little things are very tender, and therefore require a great deal of care to import them alive. On arrival, pot them in some dry soil (see ANÆCTOCHILI), and put them in a close place with little heat at first, until they begin to grow; afterwards pot them separately in small pots, and place them under hand-glasses or in a frame, giving them the treatment usually recommended for this class of plants.

Cases in which Orchids are sent home ought to be made strong, and roofed with good stout glass not easily broken; for I have often seen plants spoiled by the glass being fractured. Through an accident of this kind, salt water and cold air get in, both of which are very injurious. All cases should be air and water-tight; and to prevent the glass being broken, the best thing to place over it is some strong iron wire, or stout and broad wooden bars; the sash bars ought also to be made very strong, and the case must not be placed during the journey too near heated surfaces or fires in the vessel. I have seen many boxes of plants spoiled by being set in such positions, the leaves being completely dried up; they ought to be placed in a moderately warm situation, but by no means near any fires. Many plants also arrive in this country in a dead or dying state, from the effects of exposure to the full effects of the sun; this, however, may be obviated by simply painting the glass white inside: it must be allowed to become thoroughly dry before fastening down.

During the past year or two an immense quantity of Orchids have been sent to this country, a large proportion of which proved to be dead upon arrival. There may perhaps be

several causes assigned for this, but the rapacious appetite of the collector is the principal one, the boxes being overcrowded by his sending home thousands instead of being satisfied with a few dozens, and in consequence all arrive dead. Another probable cause of this loss, is that they may have been gathered at the wrong season. This is sad to contemplate, involving as it does the extermination of the plants in their native homes, and loss of time to the collector, which, combined with loss of money, vexation, and disappointment to the cultivator at home, has a most depressing influence upon Orchid growing. All this might be avoided if collectors would be satisfied with a less number, and would attend to the few simple rules given in this chapter, adapting them to suit the circumstances in which they find themselves placed.

INSECTS.

ORCHIDS are liable to be injured by many sorts of insects, such as red spider, thrips, mealy-bug, white and brown scale, woodlice, cockroaches, and a small snail, *Helix alliaria*. Cockroaches are among the greatest plagues we have to deal with; they will do a great deal of mischief in a few nights if not sought after on every opportunity. The food they like best, is the young tender roots and flower stems, and I have seen the roots of a plant completely eaten off in one night by these depredators. The only way to keep these insects under is by constantly looking after them, both by night and day, searching for them in the evening by candle-light, and in the daytime by moving the pots and baskets under which they harbour. They leave their hiding-places in the evening, to seek after food, and it is then that

they are most easily caught. Chase's Beetle Poison, a phosphoric mixture sold in boxes, is a capital thing to destroy them, if laid in different parts of the house in the evening. It should be placed on oyster-shells or pieces of tile or slate, two or three nights a week, and then removed for a week, repeating the operation every other week until they are destroyed. The pieces of shell should be collected every morning, and put down again in the evening. By using this preparation from time to time they may be kept under. It is also a good plan to lay some damp moss as a decoy in the hottest part of the house; this should be looked over every two or three days, and I have killed many in this way. They may also be destroyed by the use of a mixture of honey, lard, and arsenic, the latter in very small quantity, placing some of this on oyster-shells, and laying them in different parts of the house. Some growers mix the arsenic with tallow, and put it on a stick, which is stuck in the pots: care must, however, be taken that the mixture does not touch the leaves or bulbs of the plants. Bell-glasses are also used for catching these pests, placing them so that they are level with the soil or moss, and then half filling them with treacle, to which some water has been added to make it a little thinner; it should be thick enough to stick and prevent them from climbing up the glass; the dead ones should be removed every day.

Small ants are another pest in the Orchid house, as they carry the dirt to the flowers, and thus spoil their appearance. The best plan I know of by which to catch these little troublesome insects, is to cut apples in halves, scoop out some of the inside, and lay the pieces in different parts of the house, looking them over very often. I have in this way destroyed hundreds in a very short time. Treacle is also a good thing as a trap for these pests; place some in a bell-glass where they frequent—they are fond of anything sweet; they go to feed,

get into the mixture, and cannot get out again, as it sticks to them, and thus causes death. I have also found hollow bones a very good means of enticing them, and these should be dipped in boiling water and the bones laid down again; look them over often.

The woodlouse and the small snail (*Helix alliaria*) are also very destructive. These, like the cockroach, are very fond of the young roots; they may be trapped by cutting some potatoes in two, scooping out the inside, and placing them on the pots and baskets, looking them over every night and morning till the house is cleared of these vermin. Turnips cut in slices will answer the same end. Some dry moss put into flower-pots also form capital traps for the woodlouse; lay them on their sides in different parts of the house, and examine them frequently, destroying those which are caught. Toads are very useful in catching insects; a few of them in a house do a great deal of good.

The best way of getting rid of the red spider and the thrips is by frequently washing the leaves with clean water, and by fumigating the house with tobacco. My method is, to fill the house with tobacco smoke three or four times, at intervals of two or three days, till the insects are quite destroyed; evening is the best time to do this. It is also a good plan to mix some lime and sulphur together, and rub it on the pipes in different parts of the house, taking care not to use too much; and it should be used only when the pipes are warm. There should be a good supply of moisture at the same time, but not too much heat. There is also a kind of red thrips, which sometimes gets into the heart of the plants, and is very troublesome; tobacco smoke is the best remedy for this. It is very difficult to perceive, but will soon disfigure the tops of the plants if not kept under; when discovered, the house should be smoked every two or three nights till it is destroyed;

the parts on which the insects had established themselves should be washed with tobacco water.

The green fly, which makes its appearance in spring on the young flower buds, may also be destroyed by tobacco smoke, and of late we have a yellow fly introduced, which is a great pest if not kept under, and requires more looking after than the green fly; smoke will kill this nuisance, and wherever it is seen wash it off with a sponge to prevent its increase.

The brown, and white scale, and mealy-bug may be kept under by frequently sponging the leaves and bulbs with water; the white scale is very troublesome if not looked after. A little soft soap mixed with water, and rubbed over the leaves and bulbs, is a good thing to destroy this kind of scale; it should remain on for a day, and if then washed off, all will be destroyed; care should, however, be taken not to use it too strong. *Cattleyas* are very subject to this pest. The following is another recipe for destroying it:—To one gallon of rain water add eight ounces of soft soap, one ounce of tobacco, and three table-spoonfuls of spirits of turpentine; stir well together and leave the mixture for forty-eight hours; then strain it through a cloth, when it will be ready for use. It is necessary to rub the plants over two or three times, if they are much infested, but once will be sufficient in most cases. Any portion of the mixture remaining after the plants are washed, should be put into a bottle, and reserved for future use.

This recipe is also a cure for thrips on azaleas or any other plants. The ingredients as above noted should be mixed in a large tub and the plants dipped in it; this will speedily clear them of the pest. It will be seen, therefore, that it is useful to others as well as Orchid growers, and will prove a great saving of labour for those who grow large plants for exhibition, or for those who have a quantity of small plants to clear of such pests. The mealy-bug must be kept away by

constant watching and frequent cleansing. Whenever a plant is purchased that is infested with it, take care to cleanse it thoroughly before placing it in the stove or Orchid house. In a word, never allow insects to get the upper hand, or you will not long continue to grow plants to perfection, for all such pests are as poison to plants—robbing them of their vigour, and when they have lost that there is not much hope of them. There are more plants lost through uncleanliness than from any other cause.

ROT IN ORCHIDS.

ORCHIDS are subject to disease in their leaves, stems, and pseudobulbs, especially during the damp months of winter. The rot, which is apt to assail the thick fleshy bulbs, is caused by too much moisture in the house. When the heat is low, sometimes the drip from the glass will fall on the crowns of the pseudobulbs, and this soon causes them to rot. Steam is also very injurious in a house during the winter; it is particularly inimical to such plants as *Cattleyas*, *Peristerias*, *Odontoglossums*, and any other Orchids that have fleshy bulbs. When the rot attacks the bulbs it should be seen to at once, and may be easily stopped by cutting the diseased part entirely away with a sharp knife, no portion of the diseased or decayed bulb being left, and the wound should then be filled up with sulphur, to keep it dry. When the leaves begin to rot, the diseased part should also be cut clean away, and a little sulphur rubbed on the part that is cut, but not in such a manner as to let the sulphur get to the roots of the plants.

When any part of the fleshy pseudobulbs of the above-

named plants, or of those with similarly-formed bulbs, becomes discoloured, and the dark or discoloured part appears moist or wet, especially if any fluid exudes from it on pressure, the wet or discoloured part should be immediately cut out, or there is danger that the bulb will be destroyed, as the rot is often much more extensive within the bulb than the discoloured appearances on the outside would seem to indicate. The plant should also be removed to a drier and cooler place, and water should be given with the utmost care.

SPOT IN ORCHIDS.

THIS disease is the dread of many Orchid growers, and there is no denying that when it attacks plants it soon disfigures them. Some assert that it is infectious, but in this I am a total unbeliever. Indeed, I would have no hesitation in placing a plant infected with spot amongst a quantity of healthy ones, and should any of these become diseased, I should feel certain it was induced by a wrong course of treatment in some respect, and that no blame could be laid to the charge of a neighbouring plant. A great deal has been said and written respecting this disease, which I have seen in various places, and in other plants as well as in Orchids. I have not experienced much of it myself, and have in most cases found that the plants outgrow it.

To prevent the disease making its appearance, no rotten or rotting material should be permitted near the roots, either in the shape of sour stagnant moss, or soil, or decomposed wood. If the plants get sufficient, but not excessive heat, an

abundance of fresh, sweet air, without draughts or sudden chills, a liberal supply of moisture, and full exposure to the light, with shade from the direct burning rays of the sun, I am fully persuaded that the "spot" will never be troublesome. On the other hand, if any plants are attacked, they should be immediately taken out of the material, and every particle of decaying or decayed root removed, and the whole that remains sound should be well washed with warm water; after this they should be re-potted in some good sweet soil, the instructions given above for the treatment of healthy plants being otherwise followed out.

In 1860, a gentleman bought of me some plants of *Phalænopsis*, which were the finest grown plants I had seen, and they did beautifully with him for some time, growing very fast—in fact too fast, for they got sappy, and their leaves became spotted, as did also those of some others he had. Some time after I went to see them, and he asked my opinion respecting them. Upon inquiring how they had been treated, he told me that he gave them a great deal of water over the leaves, and kept the roots wet; this was during winter. I went several times to see them during the following spring, and advised him to treat them as recommended for *Phalænopsis* in these pages. These plants have quite outgrown the spot, and are now among the finest round London.

When at Hoddesdon, I had two *Phalænopses* which became affected with spot in the winter. I cut off one of the leaves, and sent it to Dr. Lindley for his opinion as to the cause of the evil. His reply was, that the plants had been kept too moist during the cold dark days of winter— a fact which I have never since lost sight of. He was quite right, for it was a sharp winter, and these two plants had been kept wet by placing the bottom of the block on which they grew in a pan of water to keep off the cockroaches. In that way, too much

moisture crept up to the roots, and, being in the winter time, this doubtless caused the leaves to become spotted. However, by following the treatment here recommended in my remarks on *Phalænopsis*, the plant soon recovered; but if a rigorous change had not been adopted in time, the disease would have gone too far, and probably killed the plants.

Much injury is done to epiphytal Orchids by keeping the plants too wet at the roots in dull weather; in fact, too much moisture in that way is injurious at any time, especially to those species that grow on branches of trees, when they come to be confined in pots and baskets with a mass of wet material about them, which is unnatural. My practice is, to give but little water at the roots during winter, and not so much as many people in summer, because I have seen the ill effects of it. The treatment I recommended some years ago I still follow, and with uniform success.

Some Orchid growers give more heat and moisture than is here recommended, and their plants have done well for a time; but under such exciting management they are apt to become spotted, and get into a permanently bad state of health; in short, the least chill, after growing in so high a temperature, is liable to induce disease. The great secret in the cultivation of these as well as of all other plants, is a proper house, without drip; sufficient ventilation, heat, and moisture; and the total banishment of all insects detrimental to vegetable life. The temperature throughout the whole year should be kept as nearly as possible in accordance with the directions laid down in these pages, which are the result of long experience and close observation.

MODE OF MAKING ORCHID BASKETS.

BLOCKS and baskets are most natural for true air-plants, such as *Vandas, Saccolabiums, Aerides, Angræcums, Phalænopses*, &c. When planted in baskets or on blocks, these send out their roots much more vigorously into the air, and suck up the moisture, whereas, if their roots are covered too much, they are very apt to rot. Various materials are used for forming baskets. Sometimes they are made of copper wire, which is very durable. Others are made from the ordinary material in use for making flower-pots—these are very good indeed, and have a neat appearance. Mr. Anderson, gardener to T. Dawson, Esq., of Meadow Bank, has some very good ones of this description; they are round, about six inches deep, with holes in the bottom, and made of the ordinary pottery clay; they are, moreover, very useful, as they last a long time, and the plants do well in them. I prefer, however, those made of wood, on account of their rustic appearance, and, besides, the roots like to cling to the wood. The best baskets are those of a square shape, made of proportionate even-sized rods without the bark. The wood should be cut into the lengths according to the size of the basket required. They should not be too large, for there are two objections to this; one is, that they take up much space; the other, that the plants do not require much room. After the wood is cut into proper lengths, the pieces should be bored within one inch from the ends, taking care to have all the holes bored at the same distance: there should be four lengths of copper wire, one for each corner, and this wire being fastened at the bottom, should be put through the hole in each piece of wood, and be afterwards brought up to form

VANDA CŒRULESCENS,

Burmah

the handle for suspending the plants from the roof. Galvanised iron wire only should be used in making baskets, for any other is probably injurious to the plants.

The best kinds of wood for blocks are acacia, apple, pear, plum, maple, hazel, or cork, if it can be obtained. The wood should be cut into lengths suitable for the size of the plants; some copper nails should be driven in at each end, to which should be fastened copper wire to form the handle; wind the wire round each nail, and leave the handle about ten inches high. Small copper or galvanised iron nails, driven in on the surface of the block, serve, by means of copper wire, to fasten the plants on to the blocks. There are some imitation blocks made with pottery ware, which are very neat, and last a long time, but it is questionable if they are so congenial to the plants as wood. The great advantage of growing Orchids on blocks or in baskets, is that of being able to get the plants near the glass, where they may reap the full benefits of sun and light.

SELECT ORCHIDS AT PRESENT IN CULTIVATION.

IN the following descriptions of all the best Orchidaceous plants now cultivated in our gardens, a general account is given of the distinctive features of each genus; this is followed by a more particular description of the individual species, together with an account of the mode of treatment which I have found, after considerable experience, best adapted to their successful cultivation.

Acineta.

This genus comprises several species; the most attractive kinds are, however, here specified. They should all be grown

in baskets, as they produce their flower spikes from the base of the pseudobulbs, and they invariably take a downward direction. The species are all evergreen, with short pseudobulbs, and leaves about a foot high; of easy culture, and are best grown in baskets with moss and peat. A liberal supply of water at the roots during their period of growth is necessary for their successful culture, afterwards less will suffice. They will all succeed in either the East Indian or *Cattleya* house, suspended from the roof, and all of them are propagated by division.

In order that the flowers in this class, as in all others, may be preserved in bloom, care should be taken not to wet them while watering the plants.

A. Barkeri.—A curious Orchid from Mexico, producing from the bottom of the pseudobulbs spikes about a foot in length, bearing rich yellow flowers, which will last a long time in perfection. It blooms during the summer.

A. densa.—A beautiful and distinct species, also from Mexico, with yellow and crimson flowers, which are produced on pendulous spikes from the base of the bulbs, and which will last a long time in perfection.

A. Humboldtii.—A strong-growing species from La Guayra. Flowers in the same way as *A. Barkeri*, but about a month earlier; the long spikes of flowers are of a deep chocolate colour, spotted with crimson. It lasts only a short time in perfection.

ACROPERA.

A genus nearly related to *Gongora*, the species of both being pretty and curious; the flowers of the one now described are large, and produced in great profusion. The treatment this plant requires is not a cool one, which is the case with many of the genus; it thrives best in the *Cattleya* house, grown in a basket with sphagnum moss and turfy peat.

A. armeniaca.—A very free-growing compact plant, attaining to about a foot in height; pseudobulbs somewhat oval, bearing on the top two broad light green leaves, and from the base producing a rather lax, many-flowered, pendulous raceme, a foot or more in length, supporting from twelve to twenty of its rich yellow flowers, slightly spotted with red; blooms very freely through the summer months, and is a very desirable plant for a basket.

ADA.

This genus, as far as I am aware, contains but one species, and is evidently nearly allied to *Brassia*. It is an extremely showy and ornamental plant, as the colour is rare amongst Orchids; it should be grown with such plants as *Odontoglossum Alexandræ*, and treated in the same manner.

A. aurantiaca.—But few plants of this most desirable Orchid have been imported, until quite recently, and this probably is the reason we have up to the present time so seldom seen it. It is a beautiful compact evergreen Orchid, growing from eight inches to a foot high; spike drooping; the flowers, which are of a bright orange colour, are placed somewhat distantly on them; native of New Grenada, being found growing at an elevation of 8,500 feet. It is another addition to our now numerous cool-house species; blooms in autumn and early spring.

AERIDES.

The species of *Aerides* are among the most beautiful of Orchids, many of them uniting every good quality that a plant can possess—rich, evergreen, and regularly-curved foliage, a graceful habit, flowers deliciously scented, and of peculiar elegance. Even when not in bloom the plants themselves are interesting objects, and give a tropical character to the collections in which they are found. The stems of the *Aerides* are

straight or slightly bent, with leaves attached on opposite sides, and they are nourished by large fleshy roots, shooting out horizontally from the lower part of the stem. The flowers, which are rich and waxy, proceed from the axils of the leaves, and extend in delicate racemes one or two feet in length, while their fragrance is so powerful as to fill the house in which they grow with grateful perfume.

These plants are of easy culture, and if properly attended to are seldom out of order. They are found in various parts of India and in the islands of the Indian Archipelago, growing on the branches of trees, generally on such as overhang streams of water; and to grow them in anything like perfection, the climate in which they grow wild must be imitated in most respects. I find they succeed best with a good supply of heat and moisture during their growing season, which is from about March to the latter end of October. During that time I keep the temperature, by day, from 70° to 75°. It may be allowed to rise to 80° and 85°, or even higher will not do any harm, provided the house is shaded from the rays of the sun. The night temperature should range from 65° to 70° in March and April, and afterwards it may rise five degrees higher.

Some grow their *Aerides* in baskets made of wood, but they may also be grown in pots—a mode of culture successfully followed by many of our Orchid growers, especially those who exhibit; for when in pots, the plants are more easily moved about. Another reason in favour of pot culture is that baskets soon decay; but if the plants are not required for exhibition, I should advise some of the smaller kinds to be grown in baskets, in which they have a fine appearance, especially if there is room for suspending them, letting the roots grow out of the basket. All the kinds will succeed well in this way. In pot culture fill the pots about three parts full of potsherds,

large pieces at the bottom, but finish off at the top with small; above this fresh living sphagnum moss should be used, and when the moss begins to decay fresh should be given to keep all healthy. They all do well on blocks of wood, but to grow them in perfection they require care as regards moisture. Sphagnum moss and broken potsherds have proved the best materials for filling baskets. They require frequent watering at the roots during the growing season; indeed, they should never be allowed to become thoroughly dry, not even during their season of rest, as they are liable to shrivel and lose their bottom leaves. *Aerides* require but little repose, and the moss should always be kept damp; but during the dull months of winter no water should be allowed to lodge on the leaves or in the heart of the plant, as it would be very apt to rot them. The plants, if not in pots, should be suspended from the roof, but not very near the glass, lest they should be affected by cold; and they should be kept perfectly free from insects, especially the different kinds of scale. There is a small kind in particular which is apt to infest them, and which, if allowed to increase, will speedily make the plants look yellow and unhealthy. It may be kept under by washing with warm water and soft-soap, applied with a sponge and left on the leaves for some twenty-four hours, when all remains of the soap should be removed with clean water.

These plants are propagated by cutting them into pieces, with roots attached to each piece. Some kinds, however, are shy in throwing up young shoots, and this makes these sorts very scarce. The *A. odoratum* division is the most easy to increase, and *A. crispum* sends out roots more freely than some others. If the plants ever get into an unhealthy condition, the best way is to cut off the bottom of the plant, and give fresh moss, with plenty of water at the roots.

A. affine.—A handsome free-flowering species from India,

with light green foliage a foot long, and pink and white flowers, produced on long branching spikes in great profusion. I have seen spikes of this two feet long, with three and four branches on each spike. It is a profuse bloomer, and has been exhibited with from thirty to forty spikes. It grows from two to three feet high, and makes one of the finest plants for exhibition, continuing in blossom three or four weeks.

A. affine superbum.—A splendid variety of the former, the colour of which is richer, and the flowers much larger, and the plant is more compact in growth. It is a free-flowering variety, producing a many-branched spike.

A. crispum.—A truly beautiful free-growing kind from India, with purple coloured stem, dark green foliage, ten inches long; the blossoms, which are abundant, are white, tipped with pink. Flowers in June or July, and lasts two or three weeks in good condition. The spikes of flowers are long and very distinct from any of the other kinds.

A. crispum, var. Lindleyanum.—A charming kind, with a large branching spike, bearing blooms of a fine rich colour about the same time as the species; sepals and petals white, lip large, rich rose; growth similar to that of *A. crispum.*

A. crispum, var. Warneri.—A splendid free-flowering variety from India. In leaves and stem it closely resembles *A. crispum*, except that the leaves are smaller and more slender in growth; the blossoms, which are produced in June and July, are white and rich rose colour, and they last three or four weeks in perfection.

A. cylindricum.—A very rare and distinct-growing plant, in habit resembling *Vanda teres*, but not so strong; the flowers, which are produced in pairs from the axils of the leaves, are as large as those of *A. crispum*, white and pink in colour. This plant is called *A. vandarum* by Prof. Reichenbach, but it has

been cultivated in our gardens for some years under the name we have retained.

A. Dominianum.—A garden hybrid, having flowers of the colour of those of *A. Fieldingii*, with the markings and shape of *A. affine*. It is very rare at present. One of the most beautiful varieties which are enriching our collections as the result of hybridising. It is the produce of a cross between *A. Fieldingii* and *A. affine*, producing rich rose-coloured flowers.

A. Fieldingii.—A magnificent free-flowering Indian species, of which there are many varieties both in growth and flowers, and which is popularly known as the *Fox-brush Aerides;* it grows from two to three feet high; some of the varieties have dark green foliage, while others are of a lighter shade; the leaves, which are broad, are eight or ten inches long; the spikes sometimes attain a length of three feet, and are branched; the flowers are clear bright rose colour, unusually large, and are produced during May, June, and July, continuing in bloom three or four weeks. This makes a fine exhibition plant.

A. japonicum.—This is quite a novelty, being, as far as I am aware, the first of the genus from Japan, and consequently will prove a cool-house species. It has thick coriaceous leaves, and a raceme of moderate length; the flowers are of a greenish white, spotted with rose colour.

A. Larpentæ.—A fine free-growing plant, with dark green leaves, ten inches long. The flowers are numerous, on a single spike, of a cream and light rose colour. It blooms in June, and lasts two weeks in perfection. This is a distinct plant, and was first flowered by Mr. Eyles, then gardener to Lady Larpent, and shown at the Regent's Park Exhibition in 1847, when it received the first prize as a new plant. Native of the East Indies.

A. Lobbii.—A free handsome-flowering species from India,

producing long spikes of deep rosy pink and white blossoms; foliage light green, about eight inches long and nearly two inches wide. Altogether a very showy kind, of which there are several varieties; many of them produce long branching spikes, and make a fine display when in bloom. This has become one of our best *Aerides* for exhibition.

A. maculosum.—A lovely dwarf Orchid from Bombay, with dark green leaves, eight inches long, close and compact, stiff growing, with light coloured flowers, spotted all over with purple, and a large purple blotch on the lip. Blooms in June and July, and, if the flowers are kept dry, lasts four weeks in perfection. The colour of the bloom is very striking. The plant is slow growing, which is the reason we so seldom see fine plants.

A. maculosum, var. Schröderi.—A magnificent free-growing plant from the hills near Bombay, much stronger than *A. maculosum* and more in the way of *A. crispum*, with dark green foliage, ten inches long; the flowers are very delicate, the sepals and petals almost alike—white, tinged with lilac and spotted with rose, the labellum being of a beautiful rose colour. It flowers in June or July, lasting three weeks in perfection. This was first flowered by J. H. Schröder, Esq. It is supposed that there was only one plant imported; and the stock at present in this country is from that one plant.

A. McMorlandi.—A magnificent species from India, compact in growth, and having bright green foliage, about ten inches in length; blossoms freely, producing long branching spikes of peach and white flowers in June and July, and continuing three or four weeks in perfection. The only plant I know of this, was in the collection of E. McMorland, Esq., in compliment to whom it is named.

A. margaritaceum.—This pretty species has spotted leaves, and in its general appearance somewhat resembles

A. maculosum; it produces spikes of pure white flowers during summer.

A. Mendelii.—This is a very handsome, distinct, and rare species. I believe the only plant in Europe is the one existing in the collection of S. Mendel, Esq., of Manly Hall, Manchester, a great lover of plants and a munificent patron of horticulture. The plant has a stem about the thickness of that of *A. virens;* the leaves, which are about seven and a half inches long, and one and a half in breadth, are smooth, shining, and of a light green colour, and have the habit of clasping the stem at the base like those of *A. quinquevulnerum.* The flowers are produced upon drooping spikes, and resemble those of *A. Larpentæ* in size and shape, but are entirely distinct in colour, being pure white tipped with rose. Native of the East Indies.

A. mitratum.—A very peculiar plant, with long whip-like terete, dark green leaves; the flowers are borne in dense erect spikes; sepals and petals pure waxy-white; lip rosy purple. An elegant and rare species from Moulmein.

A. nobile.—A magnificent free-flowering species from India, in the way of *A. suavissimum*, but with the flowers larger and of a better colour, and the growth much stronger. I have seen spikes of this from two to three feet long, and branched; colour of flowers creamy white, spotted and shaded with rose. Blooms in June, July, and August, and keeps in perfection three or four weeks.

A. odoratum.—A good old free-growing species, and one of the most abundant flowering of this genus, having pale green foliage, blooming in June or July, and remaining two or three weeks in good condition. The blossoms are white, stained with pink, and have a delightful perfume. I have seen specimens five feet high and four feet in diameter, which produced thirty or forty spikes of bloom every year; it

is altogether a noble and very useful plant. Native of the East Indies.

A. odoratum cornutum.—A handsome free-flowering variety from India, distinct in growth from the former; spikes about twelve inches long, furnished with pink and white coloured flowers, which are produced in May, June, and July, and continue upwards of three weeks in bloom.

A. odoratum majus.—Like *A. odoratum* in growth, and differing only in the larger size and longer spikes of flowers. This makes a fine exhibition plant, and may be retarded very easily without the slightest injury.

A. odoratum purpurascens.—This is a somewhat scarce variety, and one of the very best; it is robust in habit, with broad dark green leaves. It is a very free bloomer, producing a long massive spike of large flowers, which are white tipped with bright pink.

A. quinquevulnerum.—A splendid free-flowering Orchid from Manilla, with light green foliage, about one foot long, and less compact-growing than many other species. The sepals and petals are white, spotted with purple; the tip of the lip is green, the sides pink, and the middle a deep crimson: it blooms in July or August, and lasts two or three weeks in bloom. There are two varieties; one with much lighter coloured flowers than the other.

A. quinquevulnerum Farmeri.—A variety of the preceding, producing long spikes of white flowers; it grows like *A. quinquevulnerum*, and blooms about the same time. The first time this plant came under my notice was at Nonsuch Park, Cheam, the seat of W. F. G. Farmer, Esq. It is by no means plentiful.

A. roseum.—A beautiful dwarf plant from India, producing leaves a foot long, spotted with brown. It is a slow-growing species, bearing light rose-colour flowers, spotted with dark

rose; it blooms in June and July. This plant, which does not root freely, requires less moisture than any of the other kinds.

A. roseum superbum.—A fine variety, much stronger in growth than *A. roseum;* the flowers also larger, and of a richer colour. The best variety I ever saw bloomed with Mr. B. Findlay, at the Botanic Garden, Manchester. The spikes of this, as well as those of the species, are apt to damp off at the ends before the flowers open—an evil which is often caused by too much moisture having been given. It continues a long time in perfection.

A. rubrum.—A very nice cool-house species, with dark green foliage; a very distinct plant, not so showy as many of the preceding ones, but well worth growing; indeed, any one that can appreciate *Saccolabium ampullaceum* would like this, the colour being similar and the spikes longer. Native of the Madras hills.

A. suavissimum.—A distinct and desirable species, of free growth, having light green foliage ten inches long, spotted with brown. The sepals and petals are white, and the lip has a blotch of yellow in the centre edged with white. Blooms in July, August, and September, and lasts in good condition three weeks. I have flowered several varieties of this species, some of which were much better than others.

A. suavissimum maculatum.—This is a very handsome form of the preceding; the sepals and petals are white, profusely spotted with pink, so also is the lip. It bloomed very freely in the noted collection of Thomas Dawson, Esq., of Meadow Bank, during the past season.

A. testaceum.—A very pretty Orchid, distinct from anything I know; it is, in habit of growth, like *Saccolabium curvifolium*, bearing spikes a foot long, with delicate sulphur-

coloured flowers; there are several varieties of this elegant little plant.

A. Thibautianum.—This handsome Orchid is a free-growing species, with somewhat the appearance of *A. quinquevulnerum;* it produces, however, a very different spike of bloom; the spike is very long, with flowers rather laxly set upon it; sepals and petals of a beautiful rose colour, and the lip bright amethyst. It is sometimes called *A. Huttoni.* Native of Java.

A. Veitchii.—A charming species from India, with leaves about eight inches long, dark green, and covered with small spots; flowers of a white and pink colour, like so many small shells, so beautiful are they in appearance. Blooms during June and July, and lasts about three weeks in good condition.

A. virens.—A lovely plant from Java, with light green foliage eight inches long; the flowers are of a light peach colour, spotted with purple, the lip being spotted with crimson. Blooms in May and June, the flowers remaining long in perfection. A desirable species.

A. virens grandiflorum.—A magnificent variety from India, whose flowers are larger than those of *A. virens*, of a white and pink colour, and more graceful in their manner of growth. The only plant I have seen of this was in the collection of the late J. A. Turner, Esq., Manchester, where it bloomed during April and May, and continued from three to four weeks in beauty.

A. virens superbum.—This is another fine variety from India, the growth of which is the same as that of *A. virens*, except that the spikes and flowers are longer and of a brighter colour. It blooms about the same time, and remains long in perfection. There is another superb variety, called *A. Dayi*, which blooms about the same time.

A. Williamsii.—A distinct and charming kind from India, with broad dark green drooping foliage. The spikes of flower are produced in great abundance, measuring from two to three feet in length, and branched; colour, pinkish white; very scarce. First flowered in the collection of the late C. B. Warner, Esq.; blooms in June and July, and makes a fine Orchid for purposes of exhibition, on account of its free flowering character; from its delicate colour it also associates well with other kinds.

Aganisia.

A. pulchella.—A rare and pretty dwarf Orchid from Demerara, eight inches high, the only species of this genus that I know; it produces from the bottom of the bulb a spike of flowers, which are white, with a blotch of yellow in the centre of the lip. It blossoms at different times of the year, lasts two or three weeks in perfection, and is best grown in a pot, with peat and good drainage. It requires a liberal supply of water at the roots, and the hottest house. It is a very scarce plant, and is propagated by dividing the bulbs.

Anæctochilus and other Variegated Orchids.

The following short and plain description of all the *Anæctochili* I have seen grown may prove serviceable to those who are beginning their cultivation, as well as to others who, having made a commencement, have not completed their collections. I have also added the mode of cultivation which, from long experience, has been found to suit their wants. Many fine species are, however, not introduced, and there are others in catalogues that I have not seen.

Among Orchids, as well as among most other orders of the vegetable kingdom, there are variegated-leaved species and varieties, and these, like most other variegated plants, gene-

rally bear flowers small and unattractive compared with the beauty of their foliage. To this rule, however, the charming *Phalænopsis Schilleriana* is an exception; some of the *Cypripediums*, too, have both finely-variegated foliage and showy flowers. The genus *Anæctochilus* is one of the most remarkable of this handsome class of Orchids, and to its cultivation, which is not generally well understood, I will now address myself. All the varieties are remarkable for compact dwarf habit, perfect form, and great beauty: they vary in height from two to six inches, and their leaves, which are well defined, vary from two to five inches in length, including the stalks, which, like the stems of the plant, are short and fleshy. The foliage of all the species is singularly beautiful; in some of the varieties it resembles the richest olive, or rather purple velvet, regularly interspersed with a network of gold. In others the leaf is of the most lively green, covered with silver tracery. As regards cultivation, the plants require sand and peat mixed with moss; the white sandy ground from which they spring should be enlivened occasionally by small growths of moss, which sets off the plants to much advantage, especially when looked at through bell-glasses, under which the delicacy, richness, and softness of their appearance are increased. Few visitors walk through a house containing any of these plants without bestowing on them more than ordinary attention, and expressing admiration of their elegance, richness, and beauty. All the species require treatment very different from that of any other Orchid, and different growers operate in different ways, but I have not found any mode of management to succeed better than the one first laid down by me many years ago, and which is being followed by many who have *Anæctochili* growing in great perfection. They are difficult to cultivate, and many fail with them—a circumstance I attribute

to being kept too close. The case in which they are grown should always have a little air, by tilting the glass about one or two inches; this will benefit them very much, and make them more vigorous, for when too much confined in the case or bell-glass, they grow up spindly and damp off in the stem; the latter, being fleshy, requires more substance and hardihood. I have seen *Anæctochili* grown in bottom heat, which I find to be injurious: they succeed in it for a time, but not long; they grow too fast, and become so weak as often to die altogether. Some few plants which I had in bottom heat I removed to a cooler house without it, and under cooler treatment they improved very rapidly.

The finest collection I ever saw belonged to the late J. A. Turner, Esq., of Manchester, and was under the care of Mr. Toll, his gardener; the plants were grown under bell-glasses in the stove, but no bottom heat was applied. Mr. Turner purchased a plant of each kind from me some years ago; they had been grown and propagated, and he had large pots full of them, many plants of a kind being placed together. This shows how well they may be grown without bottom heat. I have also seen them doing well in other places without bottom heat, in short, they may be grown without having an Orchid house at all, any common stove will do, or even a well-heated pit. I have frequently sold collections to gentlemen who have no other Orchids, but who have bought these for the express purpose of growing them for the decoration of the dinner-table, on which they have a beautiful appearance by artificial light. As the taste for table decoration is increasing, plants such as these will doubtless be much sought after for that purpose; and the subjecting of them to exposure for a few hours in a warm room will do them little harm, provided they have glasses over them with a ventilator at the top to let out moisture, so as to keep the leaves dry. As they are generally grown in small pots, they

can be plunged in handsome vases with ornamental glass tops; and when done with, be taken back into the heat. For room-work let the foliage be dry, and there should not be much moisture at the roots. I should not, however, advise them to be used in the way just described on a frosty night; but during mild weather it will not do them any more harm than taking them to a flower-show. It was for years my custom, when living with the late C. B. Warner, Esq., at Hoddesdon, to show *Anæctochili* at the Regent's Park and Chiswick exhibitions under bell-glasses, and I never found them injured by such changes. I, however, always took care to prepare them before starting, by not giving them too much water, and by putting them in a cooler house, which should be done with all plants of a tender kind before taking them to a show. Few plants would be injured if treated in a proper way before leaving a warm house. The plants in question were shown for several years, and though that was many years ago, some of the same stock still exist; and these were grown without bottom heat and under bell-glasses in the shade. I mention this to show how many years *Anæctochili* may be grown when subjected to the treatment best suited for them.

When out of health I have found that the best way is to turn them out of their pots and examine their roots; if in a bad state below, wash the bottom of the plant, and repot in fresh soil. Thus treated I have known them to improve and do well for some time, provided they have not been allowed to get too much out of order before being seen to; if so, there may be little hope that all the care bestowed on them will be of any use. These plants, unlike some Orchids, have no thick woody pseudobulbs to support them; their small fleshy stems require constant attention to keep them in a thriving state, but with care they may be grown to perfection. The flowers are small and unattractive, and often injure the plants; I therefore

always pinch them off when they appear, and find that doing so induces them to make lateral shoots freely.

These plants require to be grown in a warm house or pit, where the temperature ranges, in winter, by night from 55° to 60° (a few degrees higher would not do them any harm), while the warmth may rise to 65° by day, and by sun heat to 70°; during March, April, and May the night temperature may range from 60° to 70°, and afterwards a few degrees higher will not be injurious. From March to October is the best time for growth, during which they will require a good supply of moisture at their roots; in fact, they should never be allowed to get dry, for then they will most likely perish; but from October to March they should only have sufficient water to keep the soil damp. They succeed best under bell-glasses, or in a glass case, with a little air always on to keep them in a healthy condition. Some will do without glasses, if in a warm house. I grow them in sphagnum, chopped into small pieces, intermixed with a little good fibrous peat and silver sand, all well mixed together. Clean river sand will, however, answer the same purpose, if they are provided with good drainage. These plants do not require large pots, as they do not make much root, but they succeed well in small pots; and if bell-glasses are used, the small pot may be plunged into a large one, so that the bell-glass may fit the outer one. If grown in cases, put them in small pots, and arrange them in the case by placing good drainage at the bottom and sphagnum on the top of the drainage, with some sand on the top of the moss to set the pots on; then arrange the kinds in the case so that the contrast of the different colours may have a good effect. The pots should be perfectly clean, with good drainage at the bottom, and should be covered with a little moss, and filled up with the material recommended. In placing the roots in the pot, raise the stem a little above the rim. Established

plants may be repotted once a year, and the end of February or the beginning of March will be found the best time for doing this. The glass or case in which they grow should be kept perfectly clean, in order that they may have plenty of light, but not any sun, which is injurious to them.

They are propagated by cutting the plants into pieces just below the first joint, and so as to have a root attached to each piece. For this purpose strong plants should be selected, and, in cutting, take care that the bottom piece has two eyes, one to root from, and the other to push into a shoot; place them in small pots in the material already named. The "bottom," or plant which has been cut, should be put under a bell-glass, or placed in the case, where it will soon throw up a young shoot, which is best left on till well rooted; then cut it off from the old plant, and treat it like the portion first removed, leaving the old part in the pot, which will throw up again, and form another plant from the bottom eye.

The *Anæctochili* are subject to different kinds of insects; red spider is very destructive to them, and, if allowed to increase, soon spoils the foliage, but if constantly looked after it may be kept in check. Upon the first symptoms of the appearance of this marauder, take the plants out of the case, and examine the under sides of the leaves, and rub them over with a sponge. It is not advisable, however, to do this except there is necessity for it. The thrips is another enemy which must be kept under in the same way, or by fumigation, taking the glasses off for a short time. Cockroaches, too, should not be allowed to get near them, or they will work great mischief by eating the young stems; they must be sought after by candle-light, or killed by placing some of Chase's beetle poison in different parts of the house. The latter is sold in boxes, and should be laid down about twice a week till

the cockroaches are destroyed. In smoking be careful not to give too strong a dose. The best way is to fumigate three times, with an interval of one night between each operation, till both thrips and spider are destroyed.

A. argyroneurus.—This extremely pretty little plant is a native of Java; it has the ground colour of the leaves light green, mottled with a darker hue, and the veins form a beautiful silvery network.

A. Bullenii.—This charming species from Borneo grows six inches high, and has leaves two and a half inches in length; ground colour bronzy green, marked through the entire length with three broad distinct lines of coppery red, varying at times to golden stripes.

A. Dayi.—A very pretty and rare species, having good-sized dark green leaves, beautifully veined with red, and grows nearly as large as *A. Lowii.*

A. Dominii.—This is a hybrid between *Goodyera discolor* and *Anæctochilus xanthophyllus*, and possesses a fine vigorous constitution. The leaves are of a dark olive green, with a pale yellow coppery streak down the centre, the main ribs marked by pale lines.

A. El Dorado.—A distinct species, and very difficult to cultivate. It appears to be a deciduous kind, and is often lost by people throwing it away, thinking that it is dead, whereas, if left, it would push up again; the foliage is dark green, with a small tracery of a lighter colour. This plant should not be allowed to get too dry at the roots when at rest; if so, it will die. It requires a good deal of care to keep it in good condition.

A. intermedius.—A fine distinct species, and one of freer growth than some others. It grows three inches high, and has leaves two and a half inches long, one and a half inch broad, with a soft silky surface; colour dark olive, striped

and veined with gold. This will do well without a glass, if in a warm house, and shaded from the sun.

A. javanicus.—A species of less interest than many others, but still worth cultivating on account of distinctness of colour; height four inches; leaves about an inch and a half long, and one inch broad; ground colour dark olive green, with blotches of a lighter green.

A. latimaculatus.—A very distinct and free-growing kind, having dark green leaves with silvery markings; it will succeed well without the protection of a bell-glass, in a warm moist atmosphere.

A. Lobbii.—A fine distinct species, attaining a height of three inches, and with leaves two and a half inches long, and an inch and a half broad; colour dark olive, with light marking over the whole surface.

A. Lowii.—A splendid kind, the largest species of the genus yet introduced; it grows six inches high, and has leaves from four to five inches long, and three inches broad; colour rich dark velvety green, shading off to mellow orange brown, lined from stalk to point with well-defined deep golden veins, and crossed by lines of the same attractive hue. The finest specimen I have seen was with Mr. Lees, of Tynningham. This remarkable plant is also called *Macodes marmorata*, and was found by Mr. Hugh Low near an opening of a large cavern in the interior of Borneo.

A. Lowii virescens.—A charming variety of the above, growing equally large, having the foliage of a lighter green, with brighter markings over the whole surface.

A. Nevillianus.—A distinct and pretty species from Borneo; grows about three inches high, and has leaves an inch and a half long; ground colour dark velvety green, enriched with blotches of orange. Apparently a free grower.

A. Petola.—One of the finest of the genus, very free

growing, and easy to increase. Of this there are two varieties, one inferior to the other, but both handsome. It grows four inches high, and has leaves from two to three inches long, and two inches broad, resembling light-coloured velvet, enriched with well-defined lines, and bands of a deep golden colour covering the whole surface. A magnificent species, more correctly named *Macodes Petola*.

A. querceticolus.—A distinct species, but inferior in beauty to many of the other kinds. It grows from three to four inches high, and has leaves two inches long; of a light green, with blotches of white down the centre. A free grower.

A. Reinwardtii.—A very pretty variety in the way of *A. setaceus;* the leaves are of a rich deep velvety bronze, beautifully and distinctly intersected with bright golden lines.

A. Roxburghii.—A pretty and distinct kind, which grows three inches high, and has leaves two and a half inches long, and an inch and a half broad, with a dark velvety green appearance, the whole surface striated with well-defined lines of silver. Several kinds are grown for this species, but the true one is very rare.

A. Ruckeri.—A pretty species from Borneo. Mr. Low, the importer of it, describes it as having leaves broadly ovate; ground colour bronzy green, with six rows of distinct spots running down the entire length of the leaves. It looks distinct from most others.

A. setaceus.—One of the handsomest of the genus, and one of the oldest in cultivation. It grows four inches high, and has leaves two inches long, and an inch and a half broad; surface a beautiful velvety green, veined in regular lines, and covered with a network of gold. There are several varieties of this charming plant, all of which are free growers.

A. setaceus cordatus.—A remarkably handsome variety; grows three inches high, and has leaves two inches long, and

an inch and a half broad; resembles the former, but is rounder in the leaf, and the gold markings are broader. A rare variety.

A. setaceus grandifolius.—A beautiful kind, growing two and a half inches high, and having leaves two inches long, and an inch and a half broad; foliage light green, beautifully laced and banded with a network of gold. A rare variety.

A. setaceus inornatus.—A very distinct form of this handsome plant; the leaves are destitute of the golden reticulation, but are of a dark rich velvety hue, with a few slight markings. Native of Java.

A. striatus.—A distinct species; grows five inches high, and has leaves three inches long, dark green, with a broad band of white down the centre. A free-growing plant, and one which may be cultivated without a glass in a warm house.

A. Turneri.—This is one of the most beautiful of the genus, and possesses the advantage of being a strong and vigorous grower; the leaves are large, of a rich bronze colour, freely marked with golden reticulations.

A. Veitchii.—A rare and fine species, named after its importer. It grows four inches high, and has leaves three inches long and two inches broad; ground colour beautiful light velvety green, interspersed from base to point with well-defined lines, and bars of the same colour, but lighter. A free-growing plant, and one which grows nearly as large as *A. Lowii.*

A. xanthophyllus.—A splendid species, and very distinct from any other variety in cultivation. It attains a height of five inches, and has leaves two and a half inches long, and an inch and a half broad; ground dark velvety green, with broad orange and green stripes down the centre, and covered with a beautiful golden network. A free-growing species.

A. zebrinus.—An elegant dwarf-growing species with ovate

lanceolate leaves, of a deep olive green, striped with copper-coloured lines. Native of India.

GOODYERA.

An interesting class of plants, with a compact habit of growth. Many of them have dark velvety-like foliage, marked with gold and silver lines down the centre of the leaves, and some of the kinds have silver and gold markings spread over the entire surface of the foliage, like the genus *Anæctochilus*. The plants have thick fleshy roots, and push from underground stems, forming beautiful round dwarf plants; the flower spikes, which issue from the centre of the foliage, attain a height of from six to ten inches; some of the kinds have delicate white flowers, especially *G. discolor*, which is one of the prettiest white winter-flowering plants grown, very useful for bouquets, as well as for other purposes. Of this genus there are many fine species yet to be introduced to our gardens. Some are of easy culture, while others are difficult to manage, but with care all may be had in perfection, and when this is attained, they amply repay any trouble that may have been bestowed. If grown in small pots, and intermixed with *Anæctochilus*, they have a fine appearance, the foliage of the *Goodyeras* forming a beautiful contrast with them; they do not, however, require the same attention—on the contrary, they will do in any close house where there is a little warmth. I grow many of them in five and six-inch pots for blooming in the winter season, placing about six plants in a pot; they should be grown strongly, so as to ensure abundance of bloom. The soil I use is peat and sand, with a little loam, and I give a liberal supply of water to the roots during the growing season. They are propagated by cutting up the plants so as to have a piece of root attached to each piece; they may be grown where there is no Orchid house, as mixed stoves suit them perfectly.

G. Dawsoniana.—A very ornamental-leaved species, which has been distributed under the name of *Anæctochilus Dawsonianus*. The leaves are blackish-green on the upper side and very glossy, with lines of beautiful golden purple traversing them from base to apex; the under side is of a uniform dull purple. The flowers, which are white, are freely produced and become useful for bouquet-making. Native of the Malay Islands.

G. discolor.—A beautiful plant from Brazil, which grows about six inches high; foliage a beautiful dark velvety colour, with white markings through its entire length; flowers white, with a little yellow in the centre, produced in winter, on a stem about ten inches high, and lasting a long time in perfection. A useful plant grown in five and six-inch pots, several plants being put in a pot so as to make a good show; even without any flowers the plants themselves are by no means unattractive.

G. Dominii.—A beautiful hybrid, raised from seed in this country, and as regards foliage, one of the best I have seen. I have not seen its blossoms: the leaves are larger than those of *G. discolor*, having a dark bronzy velvet-like appearance, with several prominent lines running their whole length, of a lightish colour—nearly white, and interspersed with smaller veins; a good addition to this class of plants, contrasting, as it does well, with the *Anæctochilus*.

G. macrantha.—A very neat and pretty terrestrial Orchid, and being a native of Japan, will be a valuable acquisition to the cool-house: the leaves are dark green, beautifully netted with a lighter shade of the same colour; it also bears large and pretty rose-coloured flowers.

G. Ordiana.—This may be only a variety of *G. Dawsoniana*, but is a very desirable plant; in habit and shape of leaf it resembles that plant, but the colour is a vivid

green, instead of deep brown, the leaves being lined with golden veins.

G. picta.—A distinct species, growing about three inches high; foliage an inch and a half long, light pea-green, with a paler band running through the entire leaf. I have not seen this flower, but it is worth growing on account of its foliage; a rare kind, whose roots are not so thick as those of *G. discolor*, it therefore requires more care.

G. pubescens.—A charming dwarf species; foliage green, enriched with white markings, in appearance something like *Physurus argenteus;* this requires a cool-house or pit to grow it in perfection; it is not difficult to manage, but requires great care; it is often destroyed by being placed in too great heat. Grow it in pots not too large, giving a liberal supply of water during the growing season; in fact, it should never be allowed to get dry at the roots. The flowers are white—not showy: I grow it on account of its beautiful foliage. Native of North America.

G. rubrovenia.—A charming distinct species from Brazil, in the way of *G. discolor;* grows several inches high, with velvet-like foliage, having three bands of red down each leaf; it has thick fleshy roots, and is of easy culture under bell-glasses or in frames. I have grown it along with *Anæctochili* for several years on account of its foliage, but it will do in a pot with the same treatment as is usually given to *G. discolor.*

G. Veitchii.—A hybrid variety of vigorous habit, raised by the Messrs. Veitch between *G. discolor* and *Anæctochilus Veitchii;* the leaves are of a rich deep reddish brown colour, marked with a few silver ribs.

G. velutina.—This is another handsome ornamental foliage plant for the cool-house: it has deep purplish green leaves, beautifully marked with silver; it is a robust and easy grower,

and produces a good spike of handsome pink flowers. Native of Japan.

Microstylis.

M. discolor.—There are several species of this curious family in cultivation, all interesting and desirable to those who wish to have a general collection; but the present one is the prettiest, and well deserving a place with the *Anæctochilus*, and it succeeds well under the same treatment; the leaves are deep reddish purple, edged with green; the flowers, which are small, and produced upon short upright spikes, are yellow, changing to orange. Native of Ceylon.

Physurus.

This is a lovely class of plants, resembling *Anæctochilus* in their beautiful foliage, and requiring the same treatment; they grow about the same height, with a creeping stem, and are propagated in the same way. Many of them will do well grown without glasses, provided they are in a warm shady house—in fact, sun will soon destroy them: they require more moisture when grown without glasses.

P. argenteus.—A handsome distinct free-growing species, with leaves two and a half inches long, one and a half broad, and having stems four inches in height; ground colour light green, with well-defined silvery markings. This does not require so much care as some others. I have seen it grow in a warm house without a bell-glass, with a good supply of water at the roots, in a shady place. Native of Brazil.

P. argenteus pictus.—A beautiful and distinct sort, growing five inches high, and having leaves three inches long, and one and a half broad; each leaf is edged with dark green, and has a handsome silver-frosted band down the centre. A very

free growing plant, and one which may be cultivated without a glass.

P. fimbrillaris.—This very pretty species has ovate leaves, beautifully streaked with silver, on a dark green ground. It is one of the prettiest of this family; and was introduced from the forests about Rio Janeiro, in Brazil.

P. maculatus.—This very pretty plant grows about six inches high, leaves two and a half inches long, dark green, with two rows of white oblong spots lying parallel with the mid-rib. Native of Ecuador.

P. nobilis.—A large and very beautifully marked species, having broadly ovate leaves of a dark green, marked with silvery veins.

ANGRÆCUM.

Curious Orchids, of which there are many species, but as the flowers of most of them are not showy, only a few are worth growing where space is limited; many of these, however, are handsome in growth, and ought to be in every collection. In habit they resemble *Aerides*, having beautiful evergreen distichous foliage, which in some kinds is regularly curved and very graceful: the flowers are produced on long spikes from the axils of the leaves. Even when not in bloom, the plants themselves are objects of interest, and give a noble appearance to the house in which they are grown. The flowers are not so much prized as they ought to be, as they are produced at the wrong time for exhibition; but, blooming as they do in winter, they are invaluable to those who look for beauty at that season. They continue six weeks or more in perfection. If in vigorous health the plants generally flower every year, and also produce young plants at the bottom. The latter, if required, should be taken off when rooted; if not, leave them on, in order to make a finer specimen. They require the same treatment and material as *Aerides*, and, like that genus, are

best grown in the East Indian house; *A. falcatum* however being an exception to this rule, as it succeeds best in the Mexican house.

A. bilobum.—An elegant little Orchid from Cape Coast, with dark green leaves and very compact growth; the blossoms are white, and have a small tail about two inches long. The plant blooms from October to December, and remains two or three weeks in good condition. I have grown this plant on a block, but it does best in a basket, where the roots obtain plenty of moisture.

A. caudatum.—A singular free-flowering species from Sierra Leone, with pale green drooping foliage, ten inches long, and very compact growth, producing racemes of flowers a foot or more in length; the flowers are greenish yellow, mixed with brown, the labellum being pure white, and furnished with a tail of pale green colour, about nine inches long. I have sometimes seen twelve or more of these curious flowers on a spike. Its season of blooming is from June to September, and it continues in perfection a long time. This is still, and always has been, a rare plant.

A. Chailluanum.—This is a very distinct plant, but at present rare in cultivation; it is interesting because of the long tail-like spurs with which the flowers are furnished, proving its relationship with *A. caudatum.* The leaves are six or eight inches long, one to two broad, and dark green in colour; flowers white, with a long yellowish green spur, produced upon pendulous spikes. It succeeds best grown on a block of wood with a little moss. Native of West Africa.

A. citratum.—A rare and pretty species from Madagascar. It has smooth bright green close-set leaves, with a slender pendulous flower spike; the flowers are pale yellow, and closely set in two rows upon the spike. It is a compact growing plant.

A. eburneum.—A noble, strong growing free-flowering Orchid from Madagascar, with very thick and broad light green stiff foliage, eighteen inches long; the flowers are of ivory whiteness, produced on upright spikes eighteen inches long, and if kept from damp, last four or five weeks in perfection. It blooms during the winter months, and is, on that account, valuable.

A. eburneum superbum.—A fine variety of *A. eburneum*, brought from Madagascar by the Rev. W. Ellis, of Hoddesdon. It is stronger in growth than the former; the blooms are very large, ivory white, open about the same time as those of *A. eburneum*, and continue a long time in beauty.

A. eburneum virens.—A free-flowering variety, the flower spikes of which are not so stiff, and are therefore more graceful, than those of *A. eburneum*. The blossoms are greenish white, and the plant has dark green foliage, about ten inches long. In perfection during December and January.

A. Ellisii.—This beautiful species was introduced to this country from Madagascar, by the Rev. W. Ellis, whose name it bears, and is undoubtedly one of the finest species of the genus in cultivation. The leaves are arranged in a distichous manner, and about ten inches in length, by upwards of two inches in breadth; dark green on the upper side, paler below, and unequally bilobed at the apex. Flower spikes some two feet long, arching, bearing from eighteen to twenty-four flowers, pure white and very fragrant; sepals and petals reflexed. Spur of the lip six inches long, and light cinnamon in colour. The profile of the flower is an exact resemblance of a cockatoo. It requires the temperature of the East Indian house.

A. falcatum.—This is a very elegant, compact-growing species, with narrow dark green leaves; the flowers are freely produced, very fragrant, pure white, and furnished with

a very long spur. . This species is an exception to the rule in respect to heat, as it succeeds in a much lower temperature. Native of Japan.

A. pellucidum.—A noble-growing plant, making bright green shining leaves from a foot to a foot and a half long, producing long spikes of white flower in winter, making it an acquisition in that dull season. It is a native of Sierra Leone, consequently requires to be kept in the warm house. It makes a good basket or block plant, and is in growth very much like a *Phalænopsis.*

A. pertusum.—This is a very distinct and pretty species, seldom to be found, however, in collections. It somewhat resembles an *Aerides* in its growth; leaves long, rather narrow, channeled above, fleshy and dark green. The spike is pendulous, longer than the leaves, and densely furnished with its pure white flowers. It blooms during the late autumn and winter months. Native of Sierra Leone.

A. sesquipedale.—A wonderful plant, brought by the Rev. W. Ellis, of Hoddesdon, from Madagascar, where he found it growing on trees. Foliage dark green, about ten inches long; blooms beautiful ivory white, and very large, with a tail or spur hanging from the bottom of the flower, from twelve to eighteen inches in length. I saw it finely flowered by Mr. Whitehead, gardener to R. Dodgson, Esq., Blackburn; on a small plant not more than a foot high were three spikes, each bearing four superb flowers. In blossom in November, December, and January, and lasts three weeks in beauty. A very beautiful-growing species, and certainly the finest of its class.

Anguloa.

The flowers of this genus are large and beautiful, and the plants make good subjects for exhibition, especially *A. Clowesii* and *A. Ruckeri*, the colours of which, from being somewhat

different to that of most Orchids, render them more valuable. The pseudobulbs are large, about eight inches high, with broad flag-shaped leaves a foot or more long; they all produce their flowers, which are about twelve inches high, from the base of the bulbs just as they begin to grow. All the kinds are best grown in pots, with rough fibrous peat, good drainage, and plenty of moisture at the roots in the growing season. The cool-house is the most suitable place for them, as they succeed best in a cool temperature. They ought to have a good season of rest, and during this time they should be kept rather dry, till they begin to show signs of growth. They are propagated by dividing the bulbs just before they begin to grow.

A. Clowesii.—A charming and free-growing species from Columbia; sepals and petals bright yellow; lip pure white. Blooms in June and July; lasts long in perfection if kept in a cool-house. There is a fine plant of this species in the rich collection of T. Dawson, Esq., under the care of Mr. Anderson, which produces in June as many as seventy-six expanded flowers. It is a truly noble plant, and is worth a journey to see when in flower.

A. Clowesii macrantha.—A fine variety, also from Columbia, growing about the same height as the preceding; the flowers, which are bright yellow, spotted with red, are produced in July, and, if kept dry, continue three or four weeks in perfection. A scarce plant.

A. eburnea.—A magnificent species from New Grenada, and consequently will make a valuable addition to the cool-house. It has large dark coloured bulbs, with bright green leaves, producing flowers as large as those of *A. Clowesii*, but of the purest white, saving the lip, which is spotted with pink. I have only seen this in bloom in Mr. Dawson's collection.

A. Ruckeri.—A handsome Orchid from the same country as the former, and flowering at the same time. The sepals

and petals have crimson spots on a yellow ground, and the lip is deep crimson. It lasts two or three weeks in good condition. Also a rare plant. There is a fine plate of this in the second series of Warner's "Illustrated Orchids."

A. Ruckeri sanguinea.—This very fine variety is precisely like the preceding in habit, but the flowers are a deep rich blood colour, very rare in cultivation; a native of Columbia.

A. uniflora.—A good species from Columbia, which flowers very freely; the blossoms are white, and are produced in June and July, lasting two or three weeks in flower.

A. virginalis.—A pretty species, likewise from Columbia, which grows about a foot high, with dark green bulbs; the blossoms, which are white, spotted all over with dark brown, are produced in June and July, and last three weeks in bloom. A rare species.

ANSELLIA.

Three of this genus at least are well worth growing; they are noble free-flowering Orchids, growing about three feet high, and blooming in winter, when they produce large spikes of flower, which, if kept in a cool-house, last long in perfection. *Ansellias* require good-sized pots, as they root very freely, and are of easy culture, provided they get the heat of the East Indian house while growing, and a good supply of water at the roots; care is, however, necessary in watering, for the young growths are apt to rot if water lies in the heart. *A. africana* was first found in Fernando Po, at the foot of a palm-tree, by the late Mr. John Ansell. All of them are propagated by dividing their bulbs after they have finished their growth, or just after they have done blooming.

A. africana.—A free-flowering noble Orchid, producing upright stems from three to four feet high, with light evergreen foliage; the flowers are produced on drooping branching spikes; sepals and petals yellow, spotted all over with dark

brown; lip yellow; keeps in beauty for two months. I have seen upwards of a hundred flowers on one spike.

A. africana gigantea.—A very fine variety of the preceding, producing upright spikes from the top of the bulbs; it flowers about the same time, and is of the same colour as *A. africana*, lasting a long time in perfection; very rare.

A. africana lutea.—A very distinct variety from Natal, resembling the others in appearance, but not so strong in growth, and producing clusters of light yellow flowers from the top of the bulbs.

ARACHNIS.

This is a small genus of very curious and highly interesting plants, requiring the same treatment as *Aerides* and *Angræcum*.

A. moschifera.—A very peculiar plant, somewhat like a *Renanthera* in habit. The flowers are large, creamy white, or lemon colour, with purple spots, and they very much resemble a spider, from whence it has derived its generic name; they are very delicately scented with musk, and continue in perfection a long time. The old spike should not be cut, as it produces flowers from its point for a long time. Native of Java.

ARPOPHYLLUM.

There are only three plants belonging to this genus with which I am acquainted that are worth growing. All three are of handsome habit, with graceful evergreen foliage, and having beautiful upright spikes of flowers, charmingly arranged, looking not unlike rows of small shells clustering round the spike, which is a foot or more in length. *A. giganteum* makes a fine exhibition plant, and the colour is distinct from that of most Orchids. All of them require the heat of a Mexican house, and they are best grown in pots, in peat and good drainage, with a liberal supply of water at the roots when growing. They are propagated by division.

A. cardinale.—A very beautiful species from Guatemala, with dark evergreen foliage. Flowers produced on upright spikes a foot high; sepals and petals light rose; lip deep red; it blooms during the summer months, and lasts three or four weeks in perfection.

A. giganteum.—A magnificent species from Guatemala, and certainly the best of the genus, having dark evergreen foliage and a graceful habit. The flower spikes, which are produced from the top of the bulbs, grow from about eight inches to a foot high; the blossoms are beautiful dark purple and rose: they are produced during April and May, and last three weeks in perfection. If required for exhibition, this should be kept at the coolest end of the house, for it will generally come in too early if not kept back.

A. spicatum.—A pretty evergreen Orchid from Guatemala, with dark red flowers on an upright spike, which continues in beauty three or four weeks during the winter months.

Aspasia.

This is a small genus, containing plants of dwarf habit. The pseudobulbs are broad and oval, and like the leaves, dark green. They require the same treatment as *Miltonia.*

A. lunata superba.—A beautiful variety of this old acquaintance in our gardens: it bloomed last season with me, and proved to be very fine; the sepals and petals are long, white at the ends, and spotted with chocolate; lip a good size, white, the centre being deep violet. A nice compact plant, well deserving a place in any collection. Native of Brazil.

Barkeria.

These plants are deciduous, losing their leaves during their season of rest; they are small growing, but free in producing flowers, which are both rich and delicate in colour. The

Barkerias merit a place in every collection; they are compact growing, with upright slender bulbs, from the top of which the numerous flower stems are produced. These plants succeed best on blocks of wood of a flat shape, so that the plants can be tied on the top without any moss. They send out their thick fleshy roots very freely, and will soon cling to the blocks. They require to be grown in a cool-house, where they can receive air every day during their season of growth. The Mexican house will be the most suitable place for them, and during their season of growth a good supply of water—twice a day in summer will not be too much for them; but during their season of rest very little water will suffice—only enough to keep their bulbs from shrivelling, about two or three times a week. They should be suspended from the roof, near the glass, where they can receive plenty of light, but not too much sun.

B. elegans.—A splendid species from Guatemala, producing upright spikes during the winter season; sepals and petals dark rose; lip reddish crimson, spotted and edged with a lighter colour; flowers as large as those of *B. spectabilis.* The finest of the genus, and very rare; of this there are two varieties.

B. melanocaulon.—A pretty and free-flowering Orchid from Costa Rica. The sepals and petals are lilac, and the labellum pink with a spot of green in the centre. It produces its blossoms on an upright spike from June to September, and will continue in perfection a long time. A very rare and desirable species.

B. Lindleyana.—From the same country as the preceding. The flowers are produced on a long spike, and are of a rich purple colour, with a blotch of white in the centre of the lip. Blooms in September and October, and lasts long in good condition.

B. Skinneri.—A beautiful free-flowering Orchid from Gua-

temala, with deep rose-coloured blossoms, which are produced on a spike sometimes two feet long, with as many as from twenty to thirty flowers on each spike. It will continue in flower from November to February. A valuable Orchid for winter blooming.

B. Skinneri superbum.—This far surpasses the preceding in the size of the flowers and of the raceme, as well as in brilliancy of colour; and it frequently produces a branched inflorescence, no doubt from its stronger growth and constitution. The present variety grows about a foot high; the flower spike proceeds from the top of the stem when the growth is nearly completed, and attains the height of from twelve to eighteen inches, bearing a large number of flowers of a dark rosy colour, somewhat deeper-tinted in the lip, which is marked towards the base with yellow streaks. Native of Guatemala.

B. spectabilis.—A charming species from the same country as *B. Skinneri*. The flowers proceed from the top of the bulb, on a spike bearing eight or ten flowers of a rosy pink or blush, dotted with deep crimson. It blooms in June and July, and lasts three or four weeks in perfection if kept in a cool-house. This makes a splendid plant for exhibition. I have seen specimens at the Chiswick and Regent's Park shows with as many as twenty spikes on one plant A very distinct and desirable Orchid.

BATEMANIA.

This is a small genus of dwarf, compact-growing plants, generally of free-flowering habit. The species are not so showy as some other Orchids, but are worth growing, as they are easily accommodated, and take but little room. They will do either in pots, or on blocks with moss; if grown in pots, peat and moss is the best material. They should be placed in the cool-house with a good supply of water in the growing season.

B. Beaumontii.—A very singular and interesting plant, dwarf growing; leaves light green; producing flowers two inches in diameter, light green, marked with brown. Native of Para.

B. grandiflora.—This extremely curious and very pretty Orchid was introduced some years ago, but is not often to be met with. It is a native of New Grenada, but not of the coolest parts of that country. It has ovate pseudobulbs some three or four inches long, bearing two large broad leathery leaves. The flower spike comes up with the young growth, bearing three or four flowers of curious structure: the sepals and petals are olive green, striped with reddish brown; the lip is white, with reddish purple streaks, orange or yellow towards the base.

BLETIA.

These are terrestrial Orchids. There are several species of this genus, but there are only a few that are worth growing. All are of easy culture, and may be grown in the Mexican house. The flowers are produced very freely when they are thoroughly established, and are very valuable for cutting for bouquets, on account of their pleasing colour, and the long time they last in water. The pseudobulbs are round and flattened, from which proceed long narrow deciduous leaves. The best material for growing them in, is a mixture of loam and leaf mould, with about two inches of drainage in the bottom of the pot, covered with a layer of moss or rough peat; the pots should be filled with the mould to within an inch of the top, the bulbs placed on the top of the mould, and just covered over. They require a good supply of water in the growing season, but not much heat. After their growth is finished, give them a good season of rest; and keep them rather dry till they begin to grow.

These plants require to be well grown to make them flower freely. The colour of the flowers is distinct from that of most of our Orchids, and produces a good effect in a house; and although they are not thought much of by many Orchid-growers, they are well worth the care that is bestowed upon them, on account of their pleasing colours.

B. campanulata.—The blossoms of this species are of a deep purple, with a white centre; flowers at different times of the year, and lasts long in perfection; from Peru.

B. hyacinthina albo-striata.—Another of the many novelties we have received from Japan, exactly similar in habit to *B. hyacinthina*, but with all the nerves white, which makes a very pretty variegation, and as it succeeds well in a cool-house, it will be a valuable acquisition.

B. Shepherdii.—A robust growing species with long, lanceolate, dark green leaves, and long and branching flower spikes. The flowers are purple, marked down the centre of the lip with yellow. It blooms during the winter months, and remains in perfection three or four weeks. Native of Jamaica.

B. Sherrattiana.—A charming species from New Grenada, in habit resembling *B. patula*. It produces large bright rose-coloured flowers, and is a most desirable acquisition to the terrestrial section of Orchids. When growing, it should be kept in the cool-house.

B. patula.—This plant should be placed in the *Cattleya* house during the growing season, but must be removed to a cooler place to rest. The spike is long, erect, many-flowered, the flowers dark purple, produced in March or April. Native of Jamaica.

Bolbophyllum.

There are several species of this genus, but only a few that are worth the attention of the amateur. The flowers of

the others are curious, particularly the *labellum*, the least breath of air or the slightest cause of motion being sufficient to set up a tremulous or dancing movement in this organ. They are chiefly valued as curiosities, require but very little room, and thrive best on small blocks of wood with a little moss, suspended in a warm part of the house; the roots require a good supply of water. They are propagated by dividing the pseudobulbs.

B. barbigerum.—A curious dwarf-growing plant, with dark green leaves and pseudobulbs; sepals and petals greenish brown; the lip is covered with dark-coloured hair, and is so loosely attached at the base as to be moved with the slightest breath, which gives it the appearance of a living thing. It lasts long in bloom. From Sierra Leone.

B. Lobbii.—The flowers of this species are large, the sepals and petals deep yellow, the upper part spotted with purple. It produces its solitary flowers on radical scapes during the summer months, and lasts long in beauty. Native of Java.

B. maculatum.—An interesting and pretty species; it has long obtuse bright green leaves, and prettily-spotted flowers. It is of easy culture, and must be kept in the warm house. Native of India.

B. reticulatum.—This is a very singular Orchid from Borneo, the handsomest of the genus, the leaf being somewhat heart-shaped, with the nerves of a deeper green than the rest of the leaf, giving it a beautifully reticulated appearance; the flowers, which are borne in pairs, are white, striped inside with purple, and the lip is spotted with the same colour. It is easy of culture, delighting in the strong heat of the East Indian house.

B. saltatorium.—A curious dwarf Orchid from Western Africa, of a greenish brown colour; blooms at different times

of the year, and lasts some time in perfection. The plant should be grown in the East Indian house.

B. siamense.—A very pretty species, and well adapted for those who, having but little space, devote it to the small-growing kinds; the leaves are longer and stouter than those of *B. Lobbii*, with ovate pseudobulbs; the flowers are pale yellow, and striped with purple; lip yellow, streaked with purplish lines. It should be grown in a pot with peat and sphagnum moss. Native of Siam.

Brassavola.

There are several species of this genus, but only a few that are sufficiently showy to be worth growing by the majority of amateurs. They are of easy culture, and grow best in a little moss on blocks of wood suspended from the roof; a liberal quantity of water is necessary during the growing season, but afterwards much less will suffice. They are best grown in the warmest house, and are propagated by dividing the plants.

B. acaulis.—A very interesting species from Central America, with rush-like foliage, and a compact habit of growth. Flowers large, creamy white. They are produced in September, and remain a long time in beauty.

B. Digbyana.—A fine compact evergreen species from the West Indies. The plant is about six inches high; the sepals and petals are creamy white; the lip of the same colour, streaked with purple down the centre, and beautifully fringed. It produces its solitary flowers during the winter months from the top of the bulb. Lasts about two or three weeks in bloom.

B. Gibbsiana.—This is a beautiful and distinct species, well worthy of general cultivation: an erect plant, belonging to the terete-leaved section, but in the present species the leaves are somewhat broad and very thick. It is a very profuse

bloomer, producing three flowers upon each spike, which are large, and white, spotted with chocolate. The temperature of the *Cattleya* house suits it best, and it should be potted in peat and sphagnum moss. I saw this rare plant blooming beautifully in the collection of H. Gibbs, Esq., under the care of Mr. Penny.

B. glauca.—A desirable compact evergreen Orchid from Mexico. Its blossoms are creamy white, with a pink mark on the upper part of the lip. It blooms in February or March, and lasts two or three weeks in perfection. This is found rather difficult to flower in some collections, but it blooms every year if the plant is strong, producing one large flower from a sheath at the top of the bulb.

B. lineata.—The present plant is too much neglected by Orchid-growers. The leaves are long, terete, channelled above, tapering to a point, and of a very deep green. The flowers are large and very fragrant; sepals and petals creamy white; lip large, pure white. It is a pendulous plant, and requires to be grown on a block, in the *Cattleya* house.

B. venosa.—A pretty free-flowering species from Central America, small and compact, with white flowers, which are produced at different times of the year. It grows best on a block suspended from the roof.

Brassia.

This genus is nearly allied to *Oncidium*, differing partly in the very much elongated sepals. Some of them are dull-coloured, so that the genus is not in great repute with Orchid-growers, but there are a few kinds that are showy, free-flowering, and last a long time in bloom, and ought to be in every collection. All have dark-green pseudobulbs, and evergreen foliage a foot or more in length. They are plants of easy culture, and will do either in the East Indian or *Cattleya* house. The flowers are

produced from the side of the bulbs on long drooping spikes. They are best grown in pots, with rough fibrous peat and good drainage, and require a liberal supply of water at the roots in the growing season; afterwards, just enough water to keep their bulbs plump will suffice, for they should never be allowed to shrivel. They are propagated by dividing the plants when they begin to grow.

B. Gireoudiana.—A very handsome species of a genus that is rather neglected by Orchid-growers; it is a plant of easy culture and good robust habit; bulbs stout, and with the leaves of a light green colour. It produces spikes of large bright yellow flowers spotted with red. Native of Costa Rica.

B. Lanceana.—A free-flowering Orchid from Demerara, blooming at different times of the year, and bearing yellow blossoms spotted with brown, which last three weeks in perfection. There are two varieties of this plant, one much better than the other, having larger and brighter coloured flowers.

B. Lawrenceana.—A handsome species from Demerara, blooming abundantly from June to August. The colour of the flowers is yellow and green spotted with brown, and they last three or four weeks in good condition, if kept dry.

B. Lawrenceana longissima.—A very striking variety of the species, the sepals being very much lengthened out; they are greenish white spotted with dark brown; the lip is also very much lengthened, and is yellowish dotted with purple. It is deserving a place in every collection.

B. maculata major.—A very free-flowering species; sepals and petals greenish yellow spotted with brown; lip white spotted with dark brown. Flowers in May and June; lasts five weeks in bloom if kept in a cool-house. From Jamaica.

B. verrucosa.—A curious species from Mexico. The upper part of the flower is pale green; the lip white, marked with green warts. It blossoms abundantly in May and June.

B. verrucosa grandiflora.—A fine variety from Mexico, of stronger growth than the typical *B. verrucosa*, and with flowers twice the size, and of a lighter colour. This is the best of the genus I have seen, and is well worth a place in every collection. There are several kinds grown for this variety, but the true one is very rare.

B. Wrayæ.—A very pretty species from Guatemala, producing its flowers on spikes two or three feet long; sepals and petals yellowish green blotched with brown; the lip is broad and yellow spotted with brown. Blooms from May to August, and continues flowering for two months.

BROUGHTONIA.

This is a small genus, in fact, as far as I am aware, it contains only a single species, which is allied to *Lælia;* it is common in the Islands of Cuba and Jamaica, more especially the latter, where it grows fully exposed to the influence of the sun.

B. sanguinea.—A very compact evergreen-growing plant, which succeeds best suspended from the roof on a block of wood, with a little moss. It requires a good supply of heat and moisture in the growing season, and produces its spikes of crimson flowers from the top of the bulb during the summer months, lasting a long time in good condition. This plant ought to be in every collection, on account of the distinct colour of its flowers. It is propagated by dividing the plant.

BURLINGTONIA.

There are some beautiful species in this genus, all of which, except *B. decora*, are of a very compact habit of growth. They have evergreen foliage, from four to six inches high, and produce their delicately-coloured flowers mostly on drooping spikes from the sides of their pseudobulbs. These

plants ought to be in every collection, however small, as they require but very little room, and may be easily grown to perfection. They thrive best in small baskets with sphagnum moss and potsherds, and require a good supply of heat and moisture while growing. They need but little rest, and should never be suffered to get too dry at the roots. They are propagated by dividing the plant. The following are among the best of these beautiful plants with which I am acquainted.

B. Batemanii.—A very pretty addition to this charming family, so deservedly admired for their neat habit and deliciously-scented white flowers. In this species, which in general appearance resembles *B. candida*, the lip, instead of being of the yellow colour, which is so usual in the genus, is of a beautiful mauve. Native of South America.

B. candida.—A handsome free-flowering Orchid from Demerara, producing drooping spikes of flowers, which are white, except on the upper part of the lip, which is yellow. It flowers at different times. A few years ago, I saw some large masses of this plant in excellent health growing on blocks, in the collection of T. Bewley, Esq., of Black Rock, Dublin. To grow this species in perfection a good supply of moisture is necessary at the roots; indeed, it should never be allowed to get dry.

B. decora.—A beautiful free-flowering species from Brazil, but a straggling grower, as it makes long stem-like growths between each pseudobulb, from which the roots proceed. The flowers are produced on upright spikes, and are of a delicate white, pencilled with light rose. It blooms during the winter months, and succeeds best in a basket, or on a block suspended from the roof.

B. decora picta.—This is a very fine form of the preceding, stronger in growth, with much larger flowers; the colour is richer, and it is altogether a superior variety. Native of

Brazil. I saw a fine plant of this, grown by Mr. J. Williams, gardener to the late C. B. Warner, Esq., Hoddesdon. It had many branching spikes of its beautiful flowers, some of them numbering twenty blossoms on each, and was grown in a basket with moss and peat.

B. Farmeri.—This is a very pretty species, and well worthy of general cultivation. It resembles *B. candida* in habit and appearance, and is a very free bloomer, producing its elegant white and yellow flowers in early summer. It succeeds best grown on a block or in a basket with sphagnum moss, suspended from the roof in the *Cattleya* house.

B. fragrans.—A charming Orchid from Brazil. The flowers are deliciously fragrant, the perfume resembling that of the hawthorn; sepals and petals white; lip white, stained with yellow down the centre; they are produced in April and May, on a drooping spike, and last three or four weeks in beauty if kept free from damp.

B. Knowlesii.—A beautiful plant, somewhat similar in habit to *B. venusta*, very dwarf and compact. The flowers are white, slightly tinged with pinky lilac, and produced in long racemes. It blooms during the autumn, and continues in perfection a long time. A scarce Orchid.

B. venusta.—A very pretty species from Brazil, in which the blossoms are white, with yellow down the centre of the lip. It blooms at different times of the year; lasts two or three weeks in good condition.

CALANTHE.

There are some beautiful species belonging to this genus, and consequently these plants are great favourites. They are of easy culture, having handsome evergreen foliage—except, however, *C. vestita*, *C. Veitchii*, and *C. Turneri*, which are deciduous, losing their leaves during the season

of rest. The three last named kinds are divided from *Calanthe* by some authors, and established under the name of *Preptanthe*. Nearly all the *Calanthes* have striking and attractive flowers. Most of them are rather large, upright-growing plants, some of them having leaves a foot and a half long and six inches broad. Their long spikes of flowers rise from the bulbs, and come up between the leaves. They generally make their growth after the flowers have faded.

The majority of the *Calanthes* are terrestrial Orchids, and are best grown in pots of a large size, with loam, leaf mould, and rotten dung mixed together. When they are planted, two inches of drainage should be put at the bottom of the pot, then a layer of moss on rough peat; after which the pot should be filled up with the mould, and the plant left about level with the rim. They succeed best when grown in the Indian house, and require well watering at the roots in their growing season, so that the mould is never allowed to get dry. But little rest is required by the evergreen kinds, and during the resting period only enough water to keep the soil slightly damp will be required. The deciduous species, however, require a long and thorough resting period, after the flowering season is past. These plants are very much subject to the brown and white scale, which should be diligently sought for and destroyed, as if allowed to accumulate, the plants will not thrive. They are propagated by dividing the plant. The following are the most beautiful of the species.

C. curculigoides.—This is an extremely rare and beautiful species; it is, however, a long time since I last saw it flower. The leaves are large, evergreen, and plaited. The flower spike is erect, bearing a head of bloom similar to that of *C. veratrifolia*, but instead of being white as in that species, the blossoms are of a beautiful orange-yellow. Its flowers are produced in summer and autumn. Native of Malacca.

C. Dominii.—A good and distinct hybrid, which grows in the same way as *C. Masuca.* The sepals and petals are lilac, the lip deep purple. It was raised by Mr. Dominy from seed in this country, and is a cross between *C. Masuca* and *C. veratrifolia.* A fine free-blooming plant.

C. furcata.—A showy Orchid from India; spikes erect, three feet long, bearing a profusion of creamy white flowers, and lasting in perfection six weeks. Its flowers, which are very freely produced, usually open in June, July, and August, and render it a good plant for exhibitions.

C. Masuca.—A desirable and free-flowering Orchid from India, producing its flowers on a spike two feet long. Sepals and petals deep violet colour, with a rich purple lip. It blooms in June, July, and August, and lasts six weeks in perfection. This is a good plant for exhibition, the colours being very distinct.

C. Masuca grandiflora.—A charming and very scarce variety, with evergreen foliage, producing gigantic flower spikes from three to four feet high, which continue blooming for three months; sepals and petals deep violet, shading off to lilac; lip very deep rich purple. On account of its long continuous blooming season, it is a fine variety for exhibition.

C. Sieboldti.—An elegant evergreen dwarf-growing cool-house species, with broad dark green plaited leaves and erect spikes, bearing large yellow flowers. A distinct and desirable species. From Japan.

C. Veitchii.—A beautiful mule, raised between *Limatodes rosea* and *Calanthe vestita*, by Mr. Dominy. It is a deciduous plant, and grows like *C. vestita.* The flower spikes are usually from two to three feet high, and the blossoms of a rich rose colour. This has proved to be one of the best and most useful for winter decoration. The finest example I ever saw

of it was in the collection of S. Mendel, Esq., under the care of Mr. Petch; the pseudobulbs were nearly eighteen inches high, and the flower spike six feet long, supporting fifty of its charming flowers.

C. veratrifolia.—A noble species from India, its spikes of flowers, which are delicate white, frequently attaining the height of two or three feet; it blooms freely from May to July, and will continue blooming for two months. The flowers should be kept free from damp, for if they get wet they are apt to become spotted. This also makes one of the finest exhibition plants; it is a very old species, but no collection should be without it.

C. vestita rubro-oculata.—A charming free-flowering Orchid from Moulmein; deciduous, and producing, from October to February, long drooping flower spikes, which have a white downy covering, and rise from the base of the finely-formed silvery green pseudobulbs when the latter are destitute of leaves. The flowers are upwards of two inches across; the sepals and petals delicate white, the lip of the same colour, with a blotch of rich crimson in the centre. No collection ought to be without the varieties of *C. vestita*, as they are all fine plants for winter blooming. We have had plants of this species with thirty spikes, and frequently with from twenty to thirty flowers on each spike, continuing in perfection for three months. The finest variety of this plant I ever saw was grown by Mr. Green, gardener to W. W. Saunders, Esq., Reigate.

C. vestita luteo oculata.—Another charming variety, in which the sepals and petals are white, and the lip of the same colour, with a blotch of yellow in the centre. The flower spikes are produced in the same way as in the last, and at the same time; it is nearly equal to it in point of beauty, and very useful for winter decoration; the finest

plant of this variety I ever saw, was in the collection of S. Mendel, Esq.

C. vestita nivalis.—An elegant variety, with pure white flowers. It is in no way different to the other forms save in being entirely destitute of the colour on the lip. It flowers in winter, and is especially valuable for wedding bouquets, or any other purpose for which pure white flowers are wanted.

C. vestita Turneri.—A handsome variety, producing longer flower spikes, larger flowers, and these in greater quantity than the previous-named kinds; the form of the flower is more compact, the colour pure white with rose-coloured eye. A peculiar feature of this variety is, that it blooms after the other forms of *C. vestita* are over, which makes it the more valuable.

CAMAROTIS.

A small genus of scandent Orchids. They have narrow coriaceous leaves, and the flowers have a thick fleshy lip, which is hollowed out somewhat in the form of a slipper. The temperature of the East Indian house is required for their successful culture. They succeed best grown in sphagnum and suspended in baskets.

C. purpurea.—A beautiful upright-growing plant, with leaves three inches long. It produces its flower spikes, which are about eight inches long, from the side of the stem; the blossoms are rose-coloured, and appear from March to May, lasting two or three weeks in beauty. This plant requires care to grow it well; it may be planted either in a pot or basket with moss, but the latter is preferable; it requires a good supply of heat, and moisture over the roots and leaves during the period of growth, but needs very little rest, and should never be allowed to shrivel. The East Indian house is the most suitable place for it. A fine specimen of this species was shown at the Chiswick and Regent's Park Exhibitions in

1850. This single plant, on which there were more than 100 spikes of flowers, was exhibited by R. S. Holford, Esq., Tetbury, Gloucestershire.

CATTLEYA.

The species of this popular genus rank among our finest Orchids; they are generally favourites, and there can be little doubt that, as the mode of treatment which they require and the ease with which they may be brought to a high state of perfection becomes better understood, they will be extensively cultivated. In many of them the pseudobulbs are singular and pleasing in form; and the dark evergreen foliage of the plants when in a healthy condition, together with their compact habit of growth, renders them peculiarly attractive. Some of the sorts have only a single leaf at the top of each pseudobulb; others, as *C. Skinneri* and *C. intermedia*, have two, and *C. granulosa* and *C. Leopoldii* have three. The flowers are large, elegant in form, and scarcely surpassed in their brilliant richness and depth of colour, the most frequent tints of which are violet, rose crimson, white, and purple, with their intermediate shades. The flower scape, which is enclosed in a sheath, rises from the top of the bulb, and a single spike sometimes contains as many as nine perfect flowers, and I have seen as many as thirty. As soon as the flowering is over, the *Cattleyas* generally begin to make their growth for the next season; but some of them, such as *C. Walkeriana*, *C. violacea*, *C. superba*, and several others, flower while making their growth. With the exception of *C. Walkeriana*, *C. marginata*, and *C. citrina*, which grow best on blocks with a small quantity of moss, I have found *Cattleyas* thrive best in pots. If the accommodation is limited, all the kinds may be grown on blocks, but they will require more attention, and seldom thrive so well as in pots. They require a good depth of drainage;

so that the pots should be filled about half full of potsherds, and these covered with a layer of moss, the remaining space being filled up with peat, taking care always to have the plants elevated above the rim.

I grow nearly all the *Cattleyas* in the Brazilian house, and am accustomed to give them a good supply of heat, and not too much water, while they are growing. Water applied to the roots once or twice a week will be sufficient for those in most vigorous state of growth; too much water is apt to cause the bulbs to rot. So long as the soil remains moist, no water is required; and when the soil becomes dry, water should be applied to the roots—not to the bulbs, as it is apt to injure them greatly. When the plants have made their growth they should be allowed to rest, and be kept rather dry, giving them just water sufficient to prevent their shrivelling.

A long season of rest is very advantageous to the plants, causing them to flower more freely and grow more vigorously afterwards. Those plants growing on blocks will require a good supply of water at their roots every day during summer, and twice or three times a week in winter.

Cattleyas require to be kept perfectly clean and free from insects. They are subject to the white scale, which should never be allowed to accumulate, as it is then difficult to remove, and the plants are in danger of being injured. In order to keep the plants free, they should be carefully looked over every three or four weeks, and sponged with clean water of the same temperature as that of the house. They are propagated by dividing the plants.

The following list comprises the most beautiful and valuable species of this splendid genus; and the collection in which they are found will seldom if ever be without one or more of the sorts in flower.

C. Aclandiæ.—A charming Orchid, from Brazil, of dwarf

habit, the bulbs seldom being above six inches high. It is generally a rather shy-blooming plant; but its large chocolate-coloured flowers are variegated with yellow, and have a rich rose-coloured lip. It flowers in June and July, and remains long in perfection. There are many fine specimens of this plant in the country now; it is a species apparently subject to much variation, some plants proving very free flowering.

C. amabilis.—A magnificent free-flowering species from Brazil, growing about eighteen inches high, making two growths in one year, and blooming from the one that is formed in spring. On each spike are from three to five blossoms, which remain about four weeks in perfection; the sepals and petals are delicate pink; the lip is large and of the richest crimson. Undoubtedly the finest of the group is represented by *C. intermedia*, which it closely resembles; it blooms during the summer months, and makes a fine exhibition plant. Very rare.

C. amethystoglossa.—A beautiful and distinct species from Brazil, and one of the prettiest I have seen; grows from two to three feet high, in the way of *C. Leopoldii*, with two leaves on the top of the bulb. From the centre of the leaves are produced spikes with six or seven flowers, each measuring more than five inches across; sepals and petals light rose, spotted with rich purple; lip deep purple; it blooms in March, April, and May, and will last five weeks in perfection. There have been a good many plants of this beautiful species imported during the last year, and many varieties have bloomed. It is seldom that two plants flower alike.

C. amethystoglossa sulphurea.—A very pretty variety of this fine Orchid, resembling in every respect the plant figured in Warner's "*Select Orchidaceous Plants*" as *C. amethystoglossa*, saving that the ground colour of the flowers is of a pure lemon colour, spotted as in the one preceding; the lip is broad, and of a rich cream colour.

C. bicolor.—A beautiful and free-flowering Orchid from Brazil; sepals and petals pale green, sometimes brown tinged with green; lip rich purple. It blooms in September, and remains a long time in perfection. It produces as many as eight or ten flowers on a spike. This is a strong grower, rising eighteen inches or two feet high. There are two beautiful varieties of this plant in the collection of T. Dawson, Esq., Meadow Bank.

C. Brabantiæ.—This is one of the Messrs. Veitch and Sons' hybrids, the result of a cross between *C. Aclandiæ* and *C. Loddigesii*, and will doubtless require the same treatment as its parents, which are both natives of the warmer parts of Brazil. It is a sturdy dwarf-growing variety, with the colours of both species very equally and handsomely blended.

C. candida.—A desirable free-growing species from Brazil, grows about a foot high; sepals and petals delicate white, slightly shaded with pink; the lip of the same colour, with a shade of yellow in the centre. It flowers from July to November, and lasts three or four weeks in good condition, if the flowers are kept free from damp. This plant makes two growths in a year, and blooms from both, producing three or four flowers on a spike.

C. citrina.—A beautiful dwarf plant from Mexico, with small oval pseudobulbs and narrow glaucous leaves. The flowers, which are large for the size of the plant, are bright yellow, fragrant, and produced from the top of the bulb, sometimes in pairs; it blooms from May to August, and lasts two weeks in perfection. This is best grown on a block of wood; the plant should be tied to the block, with the leaves hanging downwards, as it is found growing beneath the branches of trees in its native country. It succeeds best in a cool-house with *Odontoglossums*.

C. crispa.—A splendid free-growing Orchid from Brazil,

about a foot and a half high; it flowers in July and August: the blossoms are pure white, with a rich crimson stain in the middle of the lip. A single spike frequently produces four or five flowers, which continue in perfection for two weeks. This is a fine plant for exhibition in July and August. The colour of the flower is remarkably attractive, and it always produces a good effect in a collection. It is also known by the name of *Lælia crispa*.

C. crispa superba.—A magnificent variety, the flowers of which are larger than those of the preceding; sepals and petals pure white; lip rich crimson and beautifully fringed. I consider this to be one of the finest *Cattleyas* in cultivation, if true, but many are sold under this name which have no claim to it. It blooms in July and August, and will last from two to three weeks in beauty.

C. Dawsoni.—This very fine and rare *Cattleya* is like an intermediate form between *C. labiata* and *C. Mossiæ*. It is named in honour of T. Dawson, Esq., of Meadow Bank, in whose splendid collection it first flowered. It grows a foot or more high. The leaves are of a dark green colour, and of unusual thickness. The flowers are produced in clusters of three or four, very large, being some six or seven inches in diameter; sepals and petals delicate rosy purple; lip large, the upper part straw colour or yellow, the rest being of a beautiful roseate hue, and the margin fringed. The flowers are of good substance, and consequently last a long time in perfection. It is one of the grandest of its class, beautifully figured in the first volume of Warner's "*Select Orchidaceous Plants*." Introduced, it is supposed, from Brazil.

C. Devoniana.—This beautiful hybrid, for which we are indebted to the skill of Mr. Dominy, is in growth like *Lælia elegans*, making thin pseudobulbs, each bearing two leaves some six or eight inches long; flowers upwards of five

inches in diameter and produced in September; sepals and petals white tinged with pink, which becomes deeper towards the points. Lip deep rosy purple.

C. Dominiana.—A beautiful addition to this fine family; a garden hybrid, in habit resembling *Lælia elegans*, but somewhat less robust. The flowers are six inches in diameter; sepals and petals white, delicately shaded with pink; lip rosy purple, edged with white, and deep orange in the throat.

C. Dominiana alba.—This plant resembles the *C. Dominiana* in all but the colour of the flowers: the sepals and petals are broad, white, faintly shaded with lavender; the lip pure white, with a lilac blotch in the centre.

C. Dominiana lutea.—An elegant hybrid variety; sepals and petals delicate blush, lip white in front, suffused with yellow, the disk yellow, streaked with rose.

C. Dowiana.—This superb species was sent home from Costa Rica in 1864, and flowered the following autumn. In habit it resembles *C. labiata*, and thrives well under the same treatment. It produces stout pseudobulbs, and leaves about a foot high; the flowers are very large, sepals and petals bright nankeen colour, lip rich bright dark purple, beautifully streaked with gold. When properly established in cultivation, *C. Dowiana* will undoubtedly be the most gorgeous of its family, some of the imported spikes having borne five or six flowers each.

C. Edithiana.—A most splendid species from Brazil, with dark green foliage a foot high; in growth like *C. Mossiæ*; the flowers are very large, measuring in diameter from six to seven inches; sepals and petals light mauve; lip also mauve, striped with white, upper part buff. The flowers are produced in May and June, and remain in perfection three or four weeks; the only example I have seen of this, which will

make a fine exhibition plant, is in the collection of R. Warner, Esq., at Broomfield.

C. Eldorado.—This species is comparatively little known amongst Orchid-growers, a fact which is much to be regretted. It is a very beautiful object, and a valuable addition to the cultivated forms of this grand genus. In growth it very much resembles *C. quadricolor;* the sepals and petals are pale pink, lip of same colour outside, purplish-crimson towards the front, and stained with orange in the throat. Its flowers are produced during the late summer and early autumn months. Native of the Rio Negro.

C. Eldorado splendens.—This is a very beautiful and superior form of the preceding; sepals and petals clear rose, the latter much broader and serrated at the edges, lip large, throat rich deep orange, succeeded by a circle of white, which is again followed by rich violet purple, extending to the front and round the whole margins, where it is finely saw-toothed. It is a most desirable plant, and should be in every collection. Native of the Rio Negro.

C. exoniensis.—A splendid garden hybrid, having for its parents *C. Mossiæ* and *Lælia purpurata.* The sepals and petals are soft lilac; lip deep rich purple, beautifully margined with white; throat golden yellow; blooming in August and September. We are indebted to the Messrs. Veitch for raising this beautiful *Cattleya.*

C. granulosa.—A free-growing species, from Brazil, producing large olive-coloured flowers, with rich brown spots; the lip whitish, spotted with crimson. It blooms in August and September, and remains long in perfection. This is not so showy as many of the *Cattleyas;* but where there is room it is worth growing, for its distinct colours. I saw a fine variety of this, called *superba,* in the collection of R. Aders, Esq., Manchester.

C. guttata.—A free-growing Orchid, from Brazil, growing to about twenty inches high. Sepals and petals greenish yellow, beautifully spotted with crimson; the lip white, stained with purple. This is a very distinct species, and when well grown will produce as many as nine or ten flowers on a spike. It blooms in October and November, lasting two weeks in perfection.

C. guttata Leopoldii.—A charming variety from Brazil; grows about twenty inches high, and has short dark green foliage; a free-blooming kind, producing its flowers after it has made its growth. Sepals and petals dark brown, spotted with crimson; lip purple. I have seen this with thirty flowers on one spike, a condition in which it was exhibited at Regent's Park by Mr. Page, gardener to W. Leaf, Esq., Streatham, in whose collection it was grown; this was the finest spike I ever remember seeing. It generally has from six to ten flowers on a spike, and continues in perfection about three weeks, making a fine plant for exhibition on account of its distinct colour.

C. guatemalensis.—A very distinct and pretty Orchid; though not so large as many of the genus, yet the curious colour of the flowers—which are in the sepals and petals rosy purple and buff, and the lip reddish purple and orange, with a few crimson lines—amply compensates for the size, and being produced in large clusters, makes it a very desirable addition to a collection. Similar in habit to *C. Skinneri*, and requires the same treatment.

C. Harrisoniæ.—A free-growing Orchid from Brazil, attaining the height of twenty inches, and blooming in abundance from July to October. The flowers, which will last in good condition three weeks, are of a beautiful rose colour, having on the lip a slight tinge of yellow. This is a noble plant, and amply repays the care required to grow it well. A fine speci-

men of *C. Harrisoniæ*, grown by Mr. Woolley, late gardener to H. Bellenden Ker, Esq., Cheshunt, and having more than fifty flowers open at once, was shown at the Regent's Park Exhibition in 1851.

C. Harrisoniæ violacea.—A charming Brazilian variety, which grows about two feet high, and makes two growths in one year, flowering on both, in July, August, and September; it will last in bloom four weeks if kept in the coolest house. The sepals and petals are of a beautiful violet; lip same colour, with a little yellow in the centre. Will make a fine exhibition plant, the colour being very different from that of many other Orchids.

C. intermedia violacea.—A beautiful Orchid from Brazil; a free grower, and about a foot high. The sepals and petals are delicate rose colour, and the lip has a rich purple spot in the centre. It blooms in May and June, and lasts three or four weeks in perfection, if kept in a cool place. This species frequently produces as many as nine flowers on a spike, and makes a fine plant for the May and June shows. There are several varieties of *C. intermedia.*

C. intermedia superba.—A splendid variety from Brazil, growing about fourteen inches high, and making two growths in one year, but only flowering from the one made in spring. Sepals and petals delicate rose; lip broad and of the richest purple; from four to six blossoms are produced on a spike. It makes a fine plant for exhibition, and will last about four weeks in perfection.

C. labiata.—One of the best of the *Cattleyas;* it is a free-blooming species, and grows about twenty inches high. The flowers are large, often six or seven inches in diameter, and three or four on a spike; sepals and petals broad, rose colour; labellum rich crimson. It blooms in October and November, and will continue in perfection three or four weeks. The finest

specimen I ever saw was in the collection of R. Hanbury, Esq., The Poles, near Ware: the plant was cultivated in a large tub, about two feet across. This superb species was first flowered by the late Mr. Cattley, of Barnet, in honour of whom the genus is named. Native of Brazil.

C. labiata atropurpurea.—A splendid variety, which grows about the same height as the preceding; flowers large, and of a much richer colour; sometimes produced five on a spike. This variety formerly existed in the collection of E. McMorland, Esq.

C. labiata pallida.—A beautiful variety from Brazil, whose growth is shorter than that of the two preceding, and which blooms in August. The leaves are upright, and of a lighter green. Sepals and petals light pink; lip crimson, beautifully fringed. A useful variety on account of its flowering earlier than *C. labiata*, and if the flowers are kept dry, it will remain three weeks in good condition.

C. labiata Pescatorei.—A very beautiful variety, with light green foliage, and free blooming habit; sepals and petals light rose-coloured, lip rich crimson. This is distinct from the old form of *C. labiata*, blooms during the autumn, and continues three weeks in perfection.

C. labiata picta.—When well bloomed one of the finest of all *Cattleyas:* it grows about a foot high, and has light green foliage. The flowers are large, but produced sparingly, and often deformed; when well expanded, however, they are magnificent, a single bloom sometimes measuring seven inches across. Sepals and petals pure white; lip of the richest crimson, and beautifully fringed. Flowers during June and July, and will continue three or four weeks in perfection. This was first flowered at Sion House, and is often called the Sion House *Cattleya.*

C. Lemoniana.—Distinct from *C. Mossiæ* in growth, the leaves

being shorter. It grows about a foot high, and has light green foliage. The flowers are produced during the summer; colour pale pink, with yellow in the centre of the lip; it will last three or four weeks in bloom.

C. lobata.—A charming species from Brazil, very much like *C. crispa* in growth, but shorter in both bulb and leaf. The flowers are of a deep rich rose. It is a very shy-flowering plant, producing its blooms in May and June, and continuing about three weeks in perfection. One seldom sees this plant exhibited on account of its shy flowering properties. There is a variety called *C. lobata superba*, which flowers very freely; and its spikes are larger. I exhibited a fine plant of this variety at the International Exhibition in 1866, with seven spikes upon it. This species, which bloomed profusely last year, was exhibited at Manchester by several people in excellent condition, its rich and distinct colour producing an excellent effect.

C. Loddigesii.—A free-flowering species, which grows a foot or more high. Sepals and petals pale rose colour, tinged with lilac; the lip light rose, marked with yellow. It blooms in August and September, producing three or four flowers on a spike, remaining long in perfection, and is a desirable species. Native of Brazil.

C. McMorlandii.—A fine species from Brazil, in the way of *C. Mossiæ*, growing about a foot high, and having dark green foliage. Flowers about six inches in diameter; sepals and petals beautiful light rose; lip yellow and fringed. Blooms in June and July, and remains three or four weeks in perfection. Very distinct, and makes a fine exhibition plant.

C. marginata.—A handsome dwarf plant from Brazil, about six inches high. The flowers are large, usually solitary; sometimes, however, two being on a spike; sepals and petals rosy crimson; lip deep rose, margined with white. It produces its blooms in September and October, and lasts

three weeks in perfection. It is a very desirable plant, and ought to be in every collection, however small, as it requires but very little room. It grows best suspended from the roof of the house, on a block of wood, with a little sphagnum moss, and it requires a good supply of water at the root in the growing season. There are many varieties of this species, and many of them are very beautiful in colour.

C. maxima.—A magnificent species from Columbia, growing from a foot to eighteen inches high. A distinct growing plant, producing from five to ten flowers on a spike in November and December, and continuing in perfection three weeks; sepals and petals bright rose; lip richly variegated, with dark crimson veins down the centre. Of this species there are many varieties—J. Day, Esq., of Tottenham, and Bishop Sumner, at Farnham Castle, both possess a very fine variety of this charming plant. In the latter collection, under the care of Mr. Laurence, as many as thirteen fine flowers are sometimes produced upon a single spike, the usual number being nine and ten. There have been many plants of this imported within the last two years.

C. Mossiæ.—This magnificent and free-flowering species is a native of La Guayra. It grows a foot or more high, and blooms from March to August. The flowers are very large, a single one being five or six inches across, in some of the varieties still larger, and three or four growing on one spike. There are many varieties of this plant, with blossoms of various shades of colour, from white and pale pink to crimson and rose purple. This species makes a noble plant for exhibition. I have seen specimens of *C. Mossiæ* at the Chiswick and Regent's Park shows, with from thirty to forty flowers upon a single plant. The flowers will remain in perfection for three or four weeks, if kept in a cool place. Many of the varieties of this plant here enumerated bloomed

in the rich collection of Robert Warner, Esq., who makes this species one of his special favourites, and where we have seen as many as six hundred of these beautiful flowers open together. Many of these forms are very distinct. The best of those which I here introduce were named and described in the *Gardeners' Chronicle* in 1864 by Mr. Thos. Moore, of the Botanic Garden, Chelsea.

C. Mossiæ aurea.—A small-flowered variety, with the sepals and petals blush, less spreading than in most other forms; lip small, strongly marked with buff orange at the base, extending forward at the front edge, and having broken violet rose lines in the centre, surrounded by a very broad pale margin, which is almost white inwards, and tinged with blush on the extreme edge.

C. Mossiæ aurea grandiflora.—A large-flowered form; sepals and petals blush; lip marked with a bar and a few broken lines of violet rose, very much stained with orange at the base, and towards the upper part of the margin.

C. Mossiæ aurea marginata.—Large-flowered: sepals and petals deep blush; lip with deep violet-rose centre and yellow base, the yellow stain continued so as to form a broad margin to the upper expanded portion of the lip.

C. Mossiæ Blakei.—Sepals and petals deep blush, the latter frilled towards the points; lip orange buff at the base, and mottled violet rose in front, the markings passing out nearly to the edge, so that there is no sharply-defined pale frill.

C. Mossiæ complanata.—A large-flowered variety, remarkable for the almost total absence of frilliness on the petals, and especially on the lip; sepals and petals rather deep blush; lip broad and spread out at the apex, a good deal stained with orange at the base, but faintly mottled and veined with purple over the centre, leaving a broad pale blush tinted edge.

C. Mossiæ conspicua.—Large-flowered: sepals and petals blush; lip richly marked with violet rose, dashed with orange at the base, and having an irregular broadish pallid border; it blooms in great profusion.

C. Mossiæ elegans.—Rather small in size, but lively and effective in colouring: sepals and petals deep blush; lip small, with bright orange yellow base, and the central portion marked sparingly with veins of violet rose, surrounded by a broad pale edge.

C. Mossiæ fimbriata.—One of the largest-flowered of the whole series, and prettily though not heavily marked; sepals and petals rather pale blush, the latter broad and a good deal frilled throughout; lip very much frilled, marked with a bright orange stain at the base, and in front decorated with broken veins of violet rose on a white ground, the extreme edge being blush; the lip is thus distinctly edged with blush.

C. Mossiæ flammea.—Rather small, but richly coloured, the petals and lateral sepals less spreading than in other forms: sepals and petals deep blush, the latter frilled towards the tip; lip small, very deep rich orange at the opening, dense violet rose in the centre, the orange intermingling therewith, and producing a fiery crimson, the purple broken up with white in front, and irregularly margined with blush.

C. Mossiæ grandiflora.—A large-flowered variety: sepals and petals blush, the petals less frilled than in some forms; lip a deep rich purple rose, slightly stained at the base with orange, and having a narrow even edge of pale blush.

C. Mossiæ grandis.—The largest of all the forms in respect to the size of its lip; sepals and petals pale blush; lip mottled violet rose, with an irregular blush-coloured edge; the base stained with buff orange. This is beyond doubt one of the finest of all the varieties of *C. Mossiæ* that have ever come under my notice.

C. Mossiæ Helenæ.—Remarkable for its high-coloured flowers: sepals and petals deep blush, mottled with dark purple rose; the lip a rich motley purple, orange at the base, and parti-coloured at the margin.

C. Mossiæ kermesina marginata.—This magnificent variety has rich peach-coloured sepals and petals, with a large carmine lip, edged with white and beautifully fringed.

C. Mossiæ Lawrenceana.—Large-flowered, with erect stalks; sepals and petals blush, the petals very broad and considerably frilled; lip large, rich deep violet rose, slightly stained with orange in the interior, veined and mottled in front, with a narrowish and nearly even frill of blush. It is in the way of the variety *splendens*, but rather smaller in the lip, with the throat more expanded.

C. Mossiæ magnifica.—In this variety the flowers are of a very fine form, from eight to nine inches in diameter; sepals and petals of a deep rose colour; lip orange, streaked with purple. Like all the varieties of *C. Mossiæ*, if kept free from the damp, it will remain a long time in bloom.

C. Mossiæ marmorata.—One of the finest light-coloured sorts, and one of the largest-flowered; sepals and petals pale blush, the latter very broad; lip large, light rose, broken up into marbled markings, covering the whole surface, except a narrow fringe at the edge; it is a good deal stained with deep orange at the base, and the margin is not only strongly frilled, but conspicuously fringe-toothed.

C. Mossiæ Marianæ.—Small-flowered, but very distinct and chaste, and very rare; sepals and petals white; lip with a bright yellow stain at the base, prettily mottled with violet rose in the centre, and broadly and evenly margined with white. Although this variety is not so large flowered as many others, it is at once the most elegant and pleasing of all the

kinds introduced into these pages, and is worthy of a place in every collection in the country.

C. Mossiæ Mooreana.—A beautiful variety, well marked by the clearly-defined narrow white border of its lip, in the way of the var. *Marianæ;* sepals and petals pale blush; lip dense violet rose, moderately stained with orange at the base, and having a narrow even frill of white.

C. Mossiæ Napoleonis.—A very telling variety from its roseate tinge, and the erect habit of its full-sized flowers; sepals and petals deep blush; lip large, of a mottled purple in front, and deep orange at the base, with a broad margin of pale blush.

C. Mossiæ purpurata.—Large-flowered; sepals and petals deep blush; lip large, of a very dense and nearly uniform violet rose, orange at the base, and having a pale frill or margin.

C. Mossiæ Rothschildiana.—One of the larger-flowered forms; sepals and petals blush; lip very bright orange at the base, with rosy purple lines and splashes over the centre, and a broad irregular white margin; the petals are finely denticulate.

C. Mossiæ splendens.—Large-flowered: sepals and petals blush; lip rich full purple rose, with orange base, the margins blush, and very much frilled.

C. Mossiæ striata.—A curiously marked sort: sepals and petals deep blush, with paler veins, producing a motley striated appearance; lip motley rose, striped throughout with dark purple rose, the margin paler and venosely striated, the orange tint confined to the base.

C. Mossiæ superba.—Dark blush sepals and petals, the latter narrow and very slightly frilled; lip large, prominently stained with deep orange at the base, the front part brighter, and the centre veined and somewhat mottled with violet rose, leaving a broadish irregular pale margin.

C. Mossiæ venosa.—A very handsome variety, distinct-looking from there being very little orange present, and from the markings of deep violet rose being evenly distributed; sepals and petals deep blush, the petals becoming paler towards the margin; lip marked with lines of violet rose, beautifully fringed, extending nearly to the margin; the base very slightly stained with orange.

C. Mossiæ Victoriæ.—A very large and beautiful variety; the sepals and petals large, of a blush tint; the lip deep purple rose, with bold orange marking at the base, and narrow even margin of blush.

C. Mossiæ Williamsii.—A large-flowered variety; sepals and petals blush white; lip finely mottled with rose, stained with orange at the base, and having a broad pale margin; the flowers are amongst the palest in the series, and very beautiful.

C. pumila.—A charming species from Brazil, about six inches high, flowering in September. The blossoms are rose-coloured, with a crisped crimson lip, often edged with white. It remains three or four weeks in perfection, and is similar to *C. marginata* in its habit of growth.

C. quadricolor.—A very rare and pretty species, which grows about ten inches high, and produces its blossoms on the young growths in May and June. Sepals and petals light rose; lip of same colour, yellow on the upper part. There are two varieties of this plant in cultivation.

C. quinquecolor.—This pretty variety is the result of a cross between *C. Aclandiæ* and *C. Forbesii.* The sepals and petals are light olive green, spotted with brown and dark chocolate; the lip is white, with a large yellow blotch, veined with rose.

C. Schilleriana.—A charming species, which grows much like *C. Aclandiæ;* the foliage is, however, darker and rounder.

It blooms during the summer months from the young growths, the flowers being large, and nearly of the same colour as those of *C. Aclandiæ*, but much darker, and they remain in perfection three or four weeks, if kept dry.

C. Schilleriana Regnelli.—This is sometimes considered distinct from the preceding, but although well marked, it is evidently very closely allied to that plant. The pseudobulbs are usually about four or five inches high; leaves in pairs, sometimes, however, three are produced; these are thick, fleshy, and dark green; flowers borne upon upright spikes, from three to five in a cluster, measuring nearly four inches in diameter; sepals and petals somewhat oblong, spathulate, green suffused with olive, and spotted with purple; the front lobe of the lip is large, rich amethyst shaded with purple, and bordered with white; the base yellow, streaked with purple. It should be placed upon a block with a little sphagnum moss, and suspended from the roof at the warmest end of the *Cattleya* house, shaded from the direct rays of the sun, and supplied with water liberally during the growing season; during the winter less heat will suffice, but it must by no means be allowed to get dry. It is a rare plant, but a very desirable one, as it blooms twice in the year, first in the month of July, and again about the end of September or beginning of October. It is beautifully rendered amongst the superb illustrations in the second volume of Warner's "*Select Orchidaceous Plants.*" Native of Brazil.

C. Sedeniana.—A beautiful garden hybrid, the parents being *C. crispa* and *C. granulosa*; it is tall in habit; the flowers are large and handsome; the sepals and petals light rose, shaded with green; the lip has a white fimbriated margin, centre purple, with darker veins. A desirable plant.

C. Skinneri.—A beautiful and free-flowering plant from Guatemala, growing about a foot high, and blooming in

March, April, and May. The blossoms are rose purple, and remain three weeks in perfection, if kept dry. This fine species of *Cattleya*, when grown strong, will produce as many as nine or ten flowers on a spike. It is one of the finest Orchids that can be grown for any of the exhibitions in May, the colour being distinct and different from that of any other *Cattleya*. One of the finest plants of this species I ever saw was exhibited at the Regent's Park Exhibition in 1869, by Mr. Archer, gardener to A. Turner, Esq., of Leicester; it was in beautiful health, splendidly flowered, and measured some three feet in diameter.

C. speciosissima Lowii.—This is a very handsome form of the *C. labiata* type. The pseudobulbs are oblong and deeply channelled, bearing ovate, shining leaves; flowers large, frequently measuring eight inches in diameter; they are borne upon a somewhat short spike three or four together; sepals and petals broad soft flesh colour, the latter being the broadest with erose edges. The lip forms a circle, through closing over the column, the front portion being of an intense amethyst colour, varied with white and yellow markings towards the centre, where are also several lines of bright amethyst. It is a gem amongst *Cattleyas*, and first flowered with T. Dawson, Esq., Meadow Bank. Native of Venezuela.

C. superba.—This truly beautiful plant comes from Guiana. It is a slow-growing species, and usually ten inches high. It flowers in June and July. The blossoms, which are of a deep rose colour, with a rich crimson lip, will remain in bloom three weeks; it produces three or four flowers on a spike, and is a very distinct species. It requires plenty of water at all times, and should never be allowed to get in a shrivelled state—if so, it is difficult to restore to a healthy condition again; requires more heat than the other *Cattleyas*, and is

best grown on a block of wood with live sphagnum moss, but is a bad one to propagate.

C. superba splendens.—A variety of the preceding, which has been introduced from the Rio Negro; the flowers are much larger, the sepals and petals being considerably longer than the form originally introduced from British Guiana; sepals and petals delicate bright rose; lip white at the base, rosy-violet in front, and having in addition several lines of golden yellow towards the middle. It is altogether a very distinct and handsome form.

C. Trianæ.—There are an immense number of varieties of this lovely winter blooming *Cattleya,* all of which are beautiful, and some in particular; in habit of growth it resembles *C. Mossiæ.* The flowers are produced during the winter months, and measure several inches in diameter; sepals and petals usually blush; lip blush, or pale rose colour outside; the throat orange, or yellow, and the front rich purple, more or less intense. This is considered by many to be a variety only of *C. Warscewiczii;* but species or variety, it is a really charming Orchid. Native of New Grenada.

C. Trianæ Atalanta.—These three extremely fine varieties were flowered by Mr. Wilson, gardener to W. Marshall, Esq., and named by that gentleman when exhibited before the Floral Committee of the Horticultural Society, each receiving a first-class certificate. Sepals and petals upwards of three inches long and about an inch broad, white shaded with rose; petals same colour, but broader and more pointed; lip some three inches long, pale rose with a broad band of orange in the throat.

C. Trianæ Io.—Flowers of the same size as the preceding; sepals and petals clear rose, petals finely serrated at the margins; lip large, rich deep purple shaded with violet; an orange throat and marginal band of rosy-purple, edges beautifully crisp.

C. Trianæ Venus.—Another fine form of this winter-blooming species; sepals three and a half inches long and upwards of an inch broad; petals upwards of two inches broad, waved at the edges and recurved, white tinged with rose; lip three inches long, basal part rose, but rich deep rosy-purple in front shaded with violet, the centre of the lip and throat bright orange, and the edge beautifully curled.

C. velutina.—This is quite a new plant in our collections, having been first flowered by A. Williams, gardener to J. Broome, Esq., of Fallowfield, Manchester. The plant resembles *C. bicolor* in growth; sepals and petals pale orange, spotted and streaked with purple; lip orange at the base, white with violet veins in front, where the surface is velvety. The flowers are very fragrant, which is an additional recommendation. It would appear to be a native of Brazil.

C. Wagneri.—A splendid free-flowering *Cattleya*, in the way of *C. Mossiæ*, and with flowers equal in size; sepals and petals white; lip also white, with rich yellow in the centre. A fine plant for exhibition, producing blossoms in June and July, and lasting about three weeks in perfection. A very rare plant.

C. Walkeriana.—A truly elegant dwarf species from Brazil, about four inches high, with large rose-coloured flowers; the lip, which is a richer rose than the other part, having a slight tinge of yellow. There are generally two flowers produced on a spike, each measuring five inches across. It blooms twice a year, in February and June, on the young growth; and the blossoms last four or five weeks in beauty, which is longer than those of any other *Cattleya:* it is also sweet scented, and will fill the house with perfume. I always grow this plant suspended from the roof, in a place where there is plenty of light, but not too much sun, on a block of wood, surrounded by a little sphagnum moss. This plant is well

grown and flowered in the select collection of T. Jones, Esq., Manchester.

C. Warneri.—One of the finest of all *Cattleyas*. It grows in the same way as *C. labiata*, and produces blossoms equal to it in size. A very useful species for summer exhibition; flowers large, more than six inches across; sepals and petals beautiful rose; lip large, of a rich crimson, and finely fringed. This rare plant was first flowered in the rich collection of R. Warner, Esq., and I thought it the finest and most magnificent *Cattleya* that had ever come under my notice; of this there are, however, many inferior varieties. The true and original form of this splendid *Cattleya* is figured in the first series of Warner's "*Select Orchidaceous Plants*."

C. Warscewiczii.—A magnificent species which grows about a foot high, with light green foliage, in the way of *C. Mossiæ*. The flowers are large; sepals and petals purplish white; lip rich crimson. Of this there are also many varieties; blossoms during the winter months, and continues three or four weeks in perfection. Mr. Baker, gardener to A. Bassett, Esq., flowered a splendid variety of this plant.

C. Warscewiczii delicata.—A magnificent variety in the way of *C. Mossiæ*, but still very distinct. It grows about a foot high, and bears blossoms six inches across; sepals and petals white; lip large, with a beautiful yellow centre and a tinge of rose, white on the outside. Blooms in December and January; very useful during winter, and continues in perfection three or four weeks.

C. Warscewiczii delicata superba.—This grand variety was bloomed by Mr. Moore, when gardener to the Earl of Shrewsbury, at Alton Towers. It is by far the finest of its class I have ever seen; the lip is very large and finely expanded, and the sepals and petals are broad and pure white.

Chysis.

This is a beautiful, though somewhat small genus, there being but a few species, so far as I am aware. They are deciduous epiphytes, losing the leaves during their season of rest. The pseudobulbs are thick and fleshy, and about a foot long, producing their flowers with the young growth. These will do on blocks of wood, but grow much finer in baskets or pots, with peat, moss, and potsherds. All the species require a liberal supply of heat and moisture in their growing season, but after they have finished their growth, they should be removed into a cooler house till they begin to grow, and then taken back to the East Indian house. During their season of rest they require but very little water, and are propagated by dividing the plants just as they begin to grow.

C. aurea.—A charming Orchid from Venezuela, producing its flowers on a short spike, generally twice a year; the blossoms are yellow, the lip being marked with crimson. It flowers at different times of the year, and lasts about a fortnight in beauty.

C. bractescens.—A fine species from Guatemala; its flowers are produced on a short spike, sometimes six together, each flower measuring two or three inches across. The sepals and petals are white, while the lip has a blotch of yellow in the centre. It blooms in April and May; lasts two or three weeks in perfection, and makes a good show plant.

C. lævis.—A beautiful species from Guatemala. The pseudobulbs are fifteen inches long, producing from the young growths in June pendulous spikes of bloom, with eight or more flowers on each; sepals and petals yellow and orange; lip orange, blotched with scarlet or crimson, and fringed round the margin. It will last about a fortnight in good condition. A scarce plant, figured in the fifth number of Warner's "*Select Orchidaceous Plants.*" I have only seen this plant in bloom

with R. Warner, Esq., and it is the finest of all the species of *Chysis*.

C. Limminghei.—A charming species from Guatemala, which grows a foot high, producing delicate pink and rose-coloured flowers very freely, along with the young growth in May and June; they continue in perfection for three weeks. This makes a good exhibition plant, but requires a cool-house to keep it back for late flowering.

C. undulata.—An exceedingly rare and handsome kind; the pseudobulbs are some eighteen inches in height; the spike produces from ten to twelve flowers, which are in the sepals and petals of a lively orange-yellow; the lip cream colour, with numerous lines of pink. I saw this plant with Mr. Anderson, gardener to Thos. Dawson, Esq., of Meadow Bank, Glasgow, but am not aware of the country from whence it was obtained.

CIRRHOPETALUM.

The plants forming this genus are peculiar in the construction of their flowers, and a few kinds ought to be in every collection. They are small compact evergreen plants, and will do either in pots or on blocks of wood with moss; if grown in pots, fibrous peat and sphagnum, with good drainage and a liberal supply of water in the growing season is necessary for their well-being; a very little moisture will suffice when at rest: they require the heat of the East Indian house, and to be kept as near the light as possible.

C. Cumingii.—A charming Orchid, which, although introduced many years ago, is yet a scarce plant; it was introduced by Mr. Cuming from the Philippines. The flowers are curiously but regularly arranged in a circle, and the sepals, which are very much enlarged, are of a bright rich red; it is easily grown, and should find a place in every collection.

C. Medusæ.—Amongst the strange and varied forms which

the flowers of Orchids present, this is certainly one of the most remarkable. The flowers, though not large, are very numerous, and part of the sepals are very much lengthened, so that the spike looks like a head with long hair hanging down, from whence its name has been derived. It is a dwarf-growing plant, with thick fleshy leaves, and should find a place in every collection for its perfectly unique appearance. A native of Singapore.

C. Pahudii.—This is another very curious and interesting plant from Java. The habit is dwarf; leaves dark green; flowers arranged in an umbel, large, reddish brown, with bright red dots; the sepals and petals are turned back, giving it a most singular appearance. It should be grown on a block of wood in the East Indian house.

Cleisostoma.

There are several species belonging to this genus which would form beautiful ornaments in our collections, although most of them have small flowers, and therefore would not be much esteemed by the majority of Orchid fanciers. They require the same treatment as *Aerides*.

C. Dawsoniana.—In general appearance this resembles a *Renanthera;* the leaves are arranged in a distichous manner, are light green in colour, and about six inches long; spike branched, and bearing some twenty flowers, which are thick and fleshy; sepals and petals light yellow, banded with brown; lip deeper yellow, blotched and streaked with brown. Native of Moulmein.

Cœlogyne.

There are numerous species of this genus of Orchids, many of which are very beautiful, the colour of the flowers of some being rich and of a most delicate hue, whilst others are inconspicuous and not worth growing. The following produce the

best flowers, and all I have seen are evergreen. Almost all the *Cœlogynes* have bulbs from three to six inches high, from which the flowers proceed with the young growth; they make their leaves after they have done blooming: the flowers of some are very large, measuring as much as three inches across.

These plants are all best grown in pots, with peat and moss. Some of them will do on blocks, but pot culture is to be preferred. They require good drainage, and an abundance of water at their roots in their growing season; some are best grown in the East Indian house, and others will do in the cooler house with *Cattleyas*, but after they have finished their growth a cooler house will do. During their period of rest they should have but little water. They are propagated by dividing the bulbs.

C. ciliata.—A very pretty species, and well worthy of cultivation, for autumn blooming; it is a compact-growing plant, making bulbs about four inches high, with light green leaves; produces its flowers in great profusion, which are in colour yellow and white, with some brown markings.

C. cristata.—A magnificent Orchid from Nepal, dwarf and of evergreen habit; leaves six inches long; the flowers proceed from the base of the bulb, on a drooping spike, six or eight together, each flower being three or four inches across; the colour is a beautiful white, with a blotch of yellow on the lip. It blossoms in February and March, and will continue in perfection four or five weeks if the flowers are kept free from damp. Mr. R. S. Yates, of Manchester, grows a house full of this fine species for cut flowers. This is the finest of the genus, and ought to be in every collection. I have seen it with as many as sixty spikes on it at one time. This occurred on a specimen grown by Mr. Baker, gardener to A. Bassett, Esq. The *Cattleya* house is the most suitable place in which to grow it.

C. cristata citrina.—This is a very distinct variety; it in-

variably flowers some two or three weeks later than the preceding, which is a decided advantage, as it prolongs the season of flower, and it also differs in having the centre of the lip stained a delicate lemon-colour, and not yellow as in the ordinary form of the species. Native of Nepal.

C. corrugata.—This is a very pretty species, and interesting, because one of the cool Orchids from the East Indies; it is found in the Neilgherry Hills, in Madras, and probably in many other of the hilly districts of India, and will grow freely and bloom with *Odontoglossums*. It is a free compact-growing plant, producing lovely pure white flowers of considerable size; the lip is yellow inside, striped with orange; it should be grown in a pot, with an abundance of drainage.

C. Cumingii.—A pretty species from Singapore. Sepals and petals white; lip bright yellow, with white down the centre. It lasts long in beauty.

C. fuscesens.—A beautiful species from the warm parts of India, and one of the finest of the genus. The pseudobulbs are about three inches long; leaves in pairs, broadest in the middle, contracted at each end. Sepals and petals white, shaded with yellow; lip cinnamon in the centre, streaked with orange and edged with white; it flowers in autumn and winter, and lasts in bloom for a considerable time.

C. Gardneriana.—A very good species from the Khasia Hills, and which grows about a foot high; the flowers are white tinged with yellow, and produced on a drooping spike. It blooms during the winter months, and lasts three or four weeks in good condition.

C. Gowerí.—This elegant and delicate species was named and described by Professor Reichenbach in the *Gardeners' Chronicle* in the spring of 1869. The pseudobulbs and leaves resemble those of *C. ocellata;* the racemes are pendulous, bearing several flowers; sepals and petals pure white; lip

white, with a stain of pale yellow on the disc. It blooms during March and April. Native of Assam.

C. Lowii.—A fine evergreen species from Borneo. It is rather a large plant, growing about two feet high; the flowers are produced on a drooping spike, about a foot long, twelve or more of them together; they are large, of a pale yellow and chocolate colour. It blooms in June or July; lasts two weeks in good condition. This requires a large pot to grow it in perfection, being one of the freest of all the *Cœlogynes*.

C. media.—A pretty small-growing species, with short round bulbs, and leaves seven inches long; flowers on spikes ten inches high; sepals and petals creamy white; lip yellow and brown; blooms during winter, and lasts in perfection three or four weeks; grows well on a block, or in a pot in peat.

C. odoratissima.—An elegant dwarf cool-house Orchid, growing only about eight or ten inches high, and producing abundance of its white and delicately scented blooms in winter —a season when white flowers are so desirable. It is from the hills of Madras, and is impatient of heat.

C. pandurata.—A curious and distinct-flowering Orchid from Borneo; grows eighteen inches high, and has flat shining bulbs, from the bottom of which the flower spikes proceed; sepals and petals pale green; lip nearly black. This is one of the most interesting plants when in bloom that I have seen.

C. plantaginia.—A desirable Indian species, with greenish yellow flowers, having a white lip streaked with brown; a distinct kind.

C. speciosa.—A free-flowering plant from Borneo, evergreen, and about eight inches high. The flowers are creamy white, with a dark brown lip, and are produced on a short spike, two or more together, at different times of the year. It lasts long in bloom. There are two varieties of this species, one of

which is far superior to the ordinary form. These plants are very useful, as they are almost always in flower.

C. viscosa.—At present this is a rare species; it is nearly allied to *C. flaccida*, it would seem, yet very distinct from that plant. The pseudobulbs are fusiform in shape, bearing dark green leaves, which taper towards the base; sepals and petals white, lip white, the side lobes being broadly streaked with rich brown. It blooms during summer.

COLAX.

A small genus, nearly related to *Maxillaria*, but separated from them by a few trifling differences. The species here named is well deserving attention. It should be potted in peat and sphagnum with good drainage, and placed in the *Cattleya* house.

C. jugosus.—A very interesting plant which flowered recently in the rich collection of S. Rucker, Esq., under the care of Mr. Pilcher. It grows about ten inches high, with leaves two inches broad, and dark green; flowers two or three on a spike, and about two inches in diameter; sepals cream colour, petals white, with numerous stripes of rich dark purple; lip white, smaller than the petals, and striped and spotted with the same colour. It is a native of Brazil.

COMPARETTIA.

This is a small genus, of which the two species now described are the best that have come under my notice. They are very pretty plants, and distinct from any other Orchids. They are best grown on blocks of wood, with live sphagnum moss, and suspended from the roof, with a liberal supply of moisture in the growing season—in fact, they never should be allowed to get dry, or they will suffer. The flowers proceed from the base of the bulbs, and continue in beauty

a considerable time. The species of this genus should be grown in the *Cattleya* house, where they are well shaded from the sun.

C. coccinea.—A charming little plant, with the habit of a strong *Sophronites grandiflora*. It produces its spikes very freely from the base of the pseudobulbs when fully formed, bearing from three to seven brilliant scarlet and orange flowers, rendered more conspicuous by their very long spur. It blooms during the months of November and December, and is doubly valuable at this season on account of its brilliant colours; this rare species has been imported by S. Mendel, Esq., of Manly Hall, Manchester, in whose collection I saw it flowering last autumn, under the care of Mr. Petch.

C. falcata.—Similar in habit to the preceding species, but differing in having broader leaves, and somewhat different shaped flowers, which are of a deep crimson colour. A native of Columbia, and consequently does not require great heat.

CORYANTHES.

The flowers of these plants are very large extraordinary-looking objects, and, before they open, are of the shape of a Chinese foot; after opening, they form a sort of cup, having above it a pair of fleshy horns, from which a liquid exudes and drops into the cup. They produce their flowers from the base of the bulbs on a spike, four or five together. The plants are evergreen; pseudobulbs three inches high; leaves ten inches long, and two or three inches broad. They will grow either in baskets or pots, with moss and peat and good drainage, and require a liberal supply of water at the roots during their period of growth, with a good heat. They are found growing on the outside branches of trees, where they get more sun than many of our Orchids, and I believe the reason we have been rather unsuccessful with this genus is that we have

treated them in a similar manner to *Stanhopeas*, and given them too much shade. After their growth is finished, they should be kept rather dry, so that their bulbs be not allowed to shrivel. They are propagated by division of the bulbs.

C. macrantha.—The best of the genus; it comes from the Caraccas, flowers in May, June, and July, and lasts but three or four days in bloom; sepals and petals orange yellow, spotted with purple, the lip red. This plant ought to be in every collection.

C. maculata.—This species has flowers of a light yellow, spotted with dull crimson; it blooms during the summer months, and lasts but three days in beauty. Native of Demerara.

C. speciosa.—This singular Orchid also comes from Demerara, is about a foot high, with pale yellow flowers, which are produced in April or May, and last three or four days in bloom.

CYCNOCHES.

Another singular genus of plants, whose flowers are of a very peculiar form, bearing usually more or less resemblance in shape to a swan. They are not thought much of by many growers of Orchids, but some are well worth growing, as they are of easy culture, and produce their flowers freely. All are deciduous, and lose their leaves as soon as they have finished their growth. The pseudobulbs, which are thick and fleshy, are from six to ten inches high, and have three or four leaves on the top of each. They produce their flowers, which are large, from nearly the top of the bulb, some of them several together. They are best grown in the East Indian house, in pots, with rough fibrous peat and good drainage, with a liberal supply of water at the roots in their growing season; afterwards they may be kept much cooler, and should be placed near the glass, to receive all the light possible. They are

very impatient of moisture during their season of rest, being speedily destroyed if at all over watered. When they begin to grow, move them back into heat. They are propagated by dividing the bulbs when they begin to start.

C. aureum.—This is a very handsome and remarkable species, known to many by the name of the Golden Swan Orchid; it produces long racemes of closely-set light yellow flowers. It is a native of Central America, and will succeed well under the treatment recommended above.

C. barbatum.—A dwarf species; sepals and petals greenish white, spotted with pink; lip the same colour. It blooms in June or July, and lasts in flower two or three weeks. A very scarce plant. Native of New Grenada.

C. chlorochilum.—A very good species from Demerara; the flowers, which are of a yellowish colour, are produced in June or July, and last three weeks in good condition if kept dry.

C. Loddigesii.—A very curious Orchid from Surinam. It produces its blossoms on a spike, six or eight together; they are four inches across; the sepals and petals are of a brownish green colour, with darker spots, and bearing some resemblance to the expanded wings of a swan. This plant often produces two kinds of flowers on one plant very distinct from each other. It blooms in July and August, and continues in perfection for three weeks. A desirable species, which ought to be in every collection.

C. pentadactylon.—This is also a curious species from Brazil; the flowers are very large, the colour being yellow and brown. It flowers at different times of the year, and lasts long in beauty.

C. ventricosum.—A free-flowering Orchid from Guatemala; the sepals and petals are greenish yellow, with a white lip, and sweetly scented; blooms in June, July, or August, lasting in bloom three weeks.

Cymbidium.

There are several species of this genus, but only a few that are admissable into a choice selection of Orchidaceous plants; some of them are very handsome and delicate in colour. All are evergreen, with beautiful foliage. Some are large-growing plants, with short pseudobulbs, from which the leaves and flowers proceed. They succeed best grown in the East Indian house, and are generally free-flowering plants, some of them producing pendulous spikes as much as two feet long. They require plenty of pot room, as they send out thick fleshy roots very freely. I grow them in rough peat, with good drainage, and a liberal quantity of water at the roots during their period of growth; afterwards less water will suffice, and they should be kept at the cool end of the East Indian house. Propagation is effected by dividing the bulbs. The following are the best I have seen:—

C. Dayanum.—A very distinct and pretty kind, somewhat resembling *C. eburneum* in appearance, but the flower spike is pendulous, not erect as in that species; the flowers are freely produced, and are yellowish white streaked with purple; it requires the temperature of the East Indian house all the season. Native of Assam.

C. eburneum.—A remarkably handsome species, the finest of the genus, with graceful foliage, and of very compact growth. The spike is erect, about six inches high, flowers very large; the sepals and petals are pure white; the lip is the same colour, with a blotch of yellow in the centre. It blooms in February and March, and lasts a long time in bloom. A very scarce plant. We are indebted to Messrs. Loddiges for the introduction of this magnificent plant, of which there are two varieties. I have seen a pretty variety grown by Mr. Stone, gardener to J. Day, Esq., Tottenham, which is smaller in growth than the original type, and the

flowers are not so large. Sepals and petals pure white; lip of the same colour, with a blotch of yellow in the centre, and rose-coloured spots on each side.

C. giganteum.—This is not so handsome as the preceding, but it makes a good plant for winter blooming, and is a rather large-growing species. Its brown and purple flowers are produced on long upright spikes during the winter, and last long in perfection, if they are kept dry. Native of Nepal.

C. Hookerianum.—A fine addition to this family, and well adapted for a cool-house. It is a native of the Sikkim Mountains. In habit of growth similar to *C. giganteum*, but striped with greenish yellow at the base of the leaves; flower spikes erect; blossoms very large, upwards of four inches in diameter; sepals and petals green; lip straw-coloured, deep yellow at the margins, round which are large blotches of rich purple. It should be grown in a pot, and kept in a cool-house.

C. Huttoni.—A new, rare, and very remarkable-looking species. It grows about twelve or eighteen inches high, and produces long racemes of flowers of a brown colour, spotted and streaked with chocolate, excepting the lip, which is green, with chocolate stripes. It flowered with Messrs. Veitch in the summer of 1867, and is a native of Java.

C. Mastersii.—A pretty Orchid from India. It is a great deal like *C. eburneum* in its growth, but the flowers are very different in shape: they are produced on upright spikes, and are white, with a yellow centre. This plant blooms during the winter, and continues long in flower.

C. pendulum.—A very good Orchid from Sylhet. A large-growing plant, with long drooping spikes from one to two feet long; sepals and petals brown, the lip red, striped with white. It blooms in July or August, and lasts long in beauty.

C. pendulum purpureum.—A fine variety of the former, producing splendid racemes of bloom from two to three feet in length, bearing the flowers, which are, in the sepals and petals, of a rich deep red, the lip white, with crimson markings. I have seen this blooming very finely with Mr. Toll, gardener to the late J. A. Turner, Esq., Manchester: flowers in May and June, and remains a long time in perfection. Native of Sylhet.

C. tigrinum.—A very pretty plant from Moulmein. The bulbs are nearly round; the leaves some five or six inches long; the flowers large, greenish yellow, spotted with red in the sepals and petals; the lip large, and tapers to a point; its middle portion is white, striped with cross bars of purple; sides of the lip also purple.

CYPRIPEDIUM.

Many of the species belonging to this genus have beautiful foliage as well as flowers, and on this account are worth a place in every collection. They are of easy culture, and require but little space. The form of the flower is curious, being that of a slipper; hence they are generally called Our Lady's Slipper. They are all dwarf, compact, and evergreen, the leaves of some being beautifully spotted. They produce their flowers from the centre of the leaves, on an upright stalk, and rise from six inches to a foot high. The majority of the species are best grown in the East Indian house; some kinds, however, thrive best in a cooler place, and will do well in a warm greenhouse. I grow all in pots with rough fibrous peat, sphagnum moss, and sand mixed together. They all require a liberal quantity of water at their roots during their period of growth; and as they need but little rest, they never should be allowed to get too dry at the roots. The *Cypripediums* are not like most Orchids, since they have no

CYPRIPEDIUM LOWII,

Borneo.

thick fleshy bulbs to supply them with nourishment. They are propagated by dividing the plants.

C. barbatum.—A pretty species, with beautifully spotted foliage; the colour of the flowers brownish purple and white. It produces its solitary flowers at different times of the year, lasting six weeks in bloom. There are many varieties of this plant, some being much brighter in colour than others. Native of Mount Ophir.

C. barbatum nigrum.—A charming variety, producing finely variegated foliage. The flowers are larger than those of any of the other forms of *C. barbatum*, and the colour is much darker. It blooms in July and August, and continues six weeks in bloom.

C. barbatum superbum.—A fine variety, which grows in the same way as *C. barbatum*, but the foliage is brightly variegated, and the flowers more handsome, the lip being very dark, and the dorsal sepal purer white towards the apex: will last about six weeks in perfection. This makes a fine plant for exhibition.

C. biflorum.—A handsome species from India, in the way of *C. barbatum*, but with more elegantly variegated foliage; it grows four inches high. The blossoms are produced on a spike ten inches long, two flowers sometimes appearing on one stem; the dorsal sepal is very handsome, the upper part being beautiful white, while the other parts of the flower are purplish brown. Blooms in February and March, and will keep six weeks in good condition. A rare plant.

C. caricinum.—A very curious and elegant Orchid from Peru. It has a singular grassy appearance, with long creeping rhizomes, totally distinct from those of any of the other species. It grows a foot or more in height, the flower-spike rising clear of the foliage, and producing from four to seven flowers, of a pale green colour; the sepals and petals have a

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C. caricinum.—A very curious and elegant Orchid from Peru. It has a singular grassy appearance, with long creeping rhizomes, totally distinct from those of any of the other species. It grows a foot or more in height, the flower-spike rising clear of the foliage, and producing from four to seven flowers, of a pale green colour; the sepals and petals have a

white margin, the ends blotched with rich brown. A very remarkable plant, and well adapted for growing in the cool-house with *Odontoglossums*. Known also as *C. Pearcei*.

C. caudatum.—This is perhaps one of the most curious of Orchids, owing to its singularity of character, and remarkable beauty; it has probably created a greater sensation than any other of its genus. A specimen which was flowered by Mr. Wilson, in the rich collection of W. Marshall, Esq., of Enfield, was much the finest I ever witnessed. The plant is an evergreen, and grows from a foot to eighteen inches high. The foliage is of a light green colour. The flower scapes are produced after the growth is completed, and rise from the centre of the plant to a height of from twelve to eighteen inches. The sepals and petals are yellowish, marked with brown; the long tail-like petals are the most extraordinary part of the plant, often reaching, when fully developed, to the length of thirty inches, and being more deeply coloured towards the end; the lip is of a reddish brown, with the basal part yellow, beautifully spotted with reddish brown. The plant blooms during the months of April and May, and lasts in perfection for several weeks if the flowers are kept from damp. Native of Chiriqui. Professor Reichenbach separates this species, with *C. Schlimii*, *C. caricinum*, and one or two others, under the name of *Selenipedium*.

C. caudatum roseum.—A variety which grows in the same way as the preceding, and blossoms at the same time. Flowers dark rose, intermixed with yellow and green. It has all the beauties of the species with additional charms, especially brilliancy of colour.

C. concolor.—A very distinctly marked plant, a native of Moulmein. The leaves are beautifully variegated, and the flowers, which are cream-coloured and finely speckled, are borne in pairs on dark brown stems. I have seen this plant

CYPRIPEDIUM CONCOLOR,

Moulmein.

as imported, and by its appearance it is found growing among limestone rocks, and should recommend some of that material to be mixed with the peat and sand.

C. Dayanum.—A charming plant, the foliage of which is beautifully variegated, and very distinct from any other of the variegated class. The flowers, which are large, are produced in May and June, and last a long time in perfection; sepals white, with green veins; petals purplish, tinged with green. J. Day, Esq., has flowered two varieties of this: one has darker foliage than the other, and the colour of the flowers is also darker. Native of Borneo.

C. Dominianum.—This plant is one of the many startling results of hybridising, by Mr. Dominy, whose name it worthily bears; its parents are *C. caricinum* and *C. caudatum*, and it seems exactly intermediate between the two. It bears three flowers on the spike at one time, which are somewhat of the colour of those of *C. caudatum* and of the shape of those of *C. caricinum*, whilst in size they are intermediate. It is a valuable addition to this fine genus. Garden hybrid.

C. Fairrieanum.—A beautiful and distinct species from Assam, with leaves three inches long, of a light green colour, blooms very freely during the autumn months, and will continue in perfection six weeks. The dorsal sepal is proportionately large; the petals white, striped with green and purple; the lip large, brownish green and purple. This plant is seldom seen doing well: I believe the reason to be that it usually gets too much heat, for with me it succeeds best in the *Cattleya* house.

C. Harrisianum.—This is one of the fine hybrids raised by Mr. Dominy—between *C. barbatum* and *C. villosum*, and the result has been a plant exactly intermediate. The leaves are marked like those of the first named plant, and have the polished appearance of the latter. The flowers are larger

than those of *C. barbatum*, yet inferior in size to *C. villosum*; upper sepal broad and shining, dark purple, tipped with white; petals rich purple, and the lip claret coloured, tinged with green.

C. hirsutissimum.—A beautiful Indian species, with pale green foliage ten inches long. The flowers proceed from the centre of the young growths, on a stem ten inches high; the blossoms, which often measure six inches across, are of a purple, light green, and brown colour; they open in March, April, and May, and last six weeks in perfection.

C. Hookeræ.—The leaves are most beautifully variegated in this species, being of a bright dark green, finely marbled with large irregular white spots. The flowers are somewhat deficient in size, compared with others, and though not very showy, are certainly pretty; sepals and petals brownish yellow, with purple points; lip bright yellowish brown. It is a native of Borneo.

C. insigne.—A good old species from Sylhet, furnished with light green foliage. It produces its solitary flowers during the winter, lasting six weeks in bloom; sepals and petals yellowish green, the dorsal sepal tipped with white, and spotted with brown; the lip is orange and brown. I have seen a fine variety, which is exactly like the old *C. insigne* in habit; but the flowers, which are large, have bright crimson streaks running up into the white of the upper sepal, and the white being continued round the sepal gives it a very different appearance from the old variety, and adds much to its beauty. I saw this in bloom with the Messrs. E. G. Henderson.

C. insigne Maulei.—A handsome variety of the preceding. It grows in the same way, but has shorter and smaller foliage, and flowers at the same time; the dorsal sepal has much more white, this colour being continued half way down, and the spotting is purplish, so that the whole flower is better in

colour. The true plant seems rare. This was exhibited by Messrs. Maule and Sons, Bristol, after whom it is named. The blossoms will continue in perfection six weeks.

C. lævigatum.—This really grand species was discovered by Mr. J. G. Veitch, in the Philippine Islands, growing upon the roots of *Vanda Batemanii*, and bloomed in this country in the spring of 1865 for the first time. The long and thick leaves have a shining appearance; the flower scape is hairy, bearing three or four flowers; sepals striped inside with purple; petals six inches long, very much twisted, beautifully blotched with chocolate, purple, and green; lip yellow.

C. longifolium.—This is a new and very curious plant; it is somewhat robust in growth, with long strap-shaped dark green leaves; the flowers are each furnished at the base with a very large bract; the flower spike produces a quantity of flowers, but as far as I have seen but one is fully expanded at a time; the dorsal sepal is broad greenish-white bordered with brown, the lower sepal larger; petals broad, tailed, ground colour green, bordered with white and brown at the ends; lip very curious in shape, green suffused with shining brown. It is not a very showy plant, but I have seen it in very good condition with Mr. Burnet, gardener to W. Terry, Esq., Fulham. Native of Costa Rica.

C. Lowii.—A curious and beautiful Orchid, with oblong-ligulate light green leaves. This species produces its flowers on a spike, generally two or more together. Dr. Lindley, indeed, describes as many as eight being sometimes produced, but I have never seen so many on cultivated plants. It blooms during the summer, and continues in perfection for two or three months if kept in a cool-house. The dorsal sepal is downy outside, pale green within; petals long, the basal half greenish spotted with purple, wholly purple towards the end, the margins being ciliated; lip large, smooth, and shining,

bluntly oblong, light brown in colour suffused with purple. Native of Borneo, where it grows upon very high trees.

C. niveum.—A plant resembling *C. concolor* in its foliage, although when closely examined the markings are slightly different; the flowers are satiny-white inside, speckled with a few minute dots of purple. It sometimes produces two flowers on a spike, and blooms during summer. A native of Moulmein.

C. pardinum.—The leaves of this plant are mottled with various shades of green on the upper side, purplish beneath; the flowers are large, and from two to three are produced upon a spike; dorsal sepal white striped with bright green, lower sepal smaller; petals broad and pointed, lower portion yellowish green, spotted with purplish black, the remaining portion reddish purple, and fringed at the edges with fine hairs; lip light bright green, tinged with pale yellow. This is an extremely rare species, and appears to be of Indian origin.

C. Parishii.—A very distinct plant, with a habit of growth like that of *C. lævigatum.* The leaves are broad, dark green above, paler below; flower spike bearing from three to six large flowers; sepals broad, and, like the lip, greenish white; petals long like *C. lævigatum*, undulated, green at base, upper portion deep purple; margins sparingly furnished with hairy worts. It should be grown in the East Indian house. Native of Moulmein.

C. purpuratum.—A pretty species from the Indian islands, with beautifully spotted foliage, producing its flowers during the winter months. The flowers are very much like those of *C. barbatum*, except that the dorsal sepal has more pure white at the end.

C. Schlimii.—A rare and beautiful species from Ocăna, New Grenada, very distinct in growth, as well as in flower,

from most others. The leaves are eight inches long, light green; spikes branching, with as many as eight flowers on each; flowers two inches across, the sepals and petals white and green, the lip white, beautifully mottled and striped with dark rose. This is a difficult plant to cultivate. The imported plants of this species all appear as if they had been growing beside streams of water which are subject to being flooded, for the leaves are frequently coated to a great extent with river mud; and it would, therefore, appear that our difficulties with this plant have arisen chiefly from an insufficient supply of water. Pot in peat, a little turfy loam, and sand, with good drainage, and take care that water does not lodge in the heart of the plant. It is best grown in the *Cattleya* house. There have been many seedlings of *C. Schlimii* raised by Mr. Pilcher, gardener to S. Rucker, Esq., and I hope he will get some improved varieties.

C. Stonei.—This superb species is a native of Borneo, and first flowered in the fine collection of J. Day, Esq., Tottenham. It produces dark green obtuse leaves, ten or twelve inches long, from the midst of which the scape ascends, bearing three flowers; sepals large, white, streaked with dark purple, and tinged with yellow; petals five inches long, yellow, streaked and blotched with purple; lip large, purplish, with red veins. There are several varieties, but all are worth growing.

C. Stonei platytænium.—This handsome variety has been flowered by J. Day, Esq., Tottenham. It is similar to *C. Stonei*, but has long straight broad petals, beautifully spotted, and is a grand addition to this class.

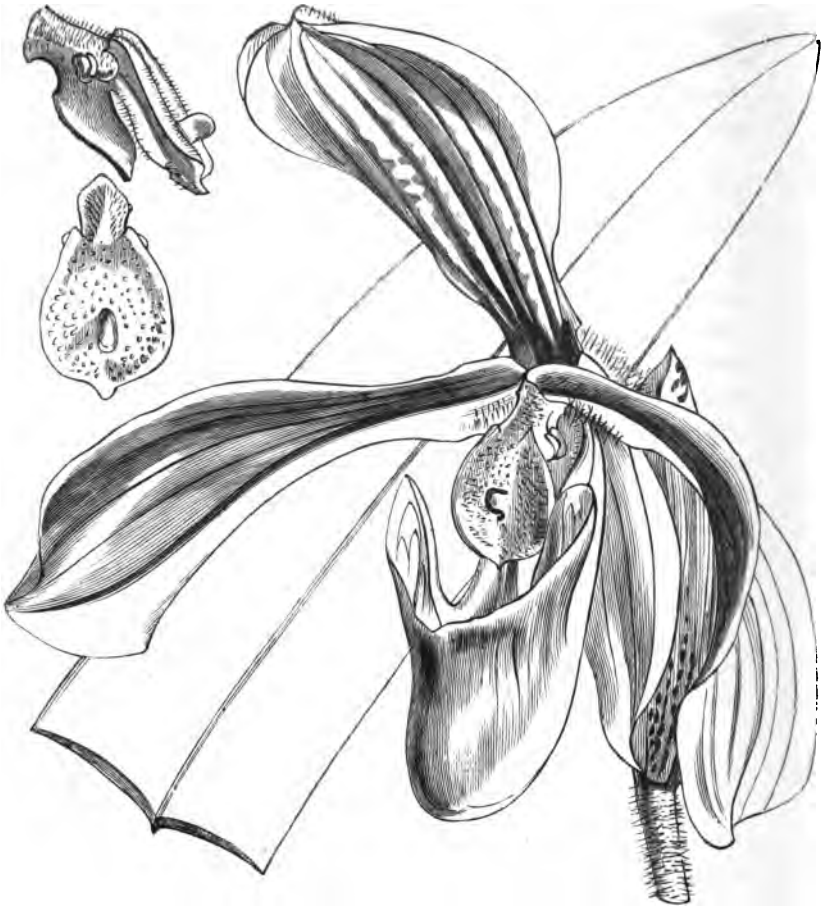
C. superbiens.—This very handsome species of Lady's Slipper is a native of Java and Assam, and may be regarded as the best of the *C. barbatum* group. It is of free growth and good habit, and has finely variegated foliage, so that when out

of bloom it has a beautiful appearance; it blooms in June and July, and continues a long time in flower, so that it is invaluable for home decoration or exhibition purposes. Mr. Penny, gardener to H. Gibbs, Esq., showed a very fine specimen at Regent's Park Exhibition, July, 1867. When well grown this makes a grand plant. It is sometimes grown under the name of *C. Veitchianum.*

C. vexillarium.—This is an elegant hybrid, raised by Mr. Dominy, and is the result of a cross between *C. Fairrieanum* and *C. barbatum*, the flowers being exactly intermediate. The leaves are pale green, with a few darker markings. The flowers are about the size of those of *C. Fairrieanum;* dorsal sepal white, tinged with green towards the base, suffused with light purple, and streaked with a darker shade of the same colour; petals deflexed as in *C. Fairrieanum*, but less waved at the edges, purplish tinged with green, and furnished with a few worts; lip large, light brown, veined and tinged with green. At present this plant is extremely rare.

C. venustum.—The leaves of this plant are light green, curiously blotched and mottled with a deep black green, and on the under side green mottled with purple; the dorsal sepal is greenish-white; petals nearly of the same colour, whilst the lip is yellowish green. It is a pretty cool-house species, and is very useful for cutting. Native of Sylhet.

C. venustum spectabile.—A beautiful form of this useful old winter flowering species. The leaves are beautifully mottled with green. The flowers are medium sized, produced singly, and far more handsome than those of the ordinary type; the dorsal sepal is white, broadly striped with green; petals greenish-white, streaked with deeper green, and tipped with rosy red; lip greenish-yellow, and tinged with rose. A rare plant, beautifully figured in the second volume of Warner's "*Select Orchidaceous Plants.*" Native of Sylhet.



CYPRIPEDIUM VILLOSUM,

Moulmein.

C. villosum.—A desirable Indian species, which grows about a foot high. The leaves are of a light green colour, freckled on the lower part with dark spots. Flowers produced singly, often measuring five inches across, and having a fine glossy appearance over their whole surface, which is orange red, intermixed with light green and dark purple. Blossoms during April and May, and continues from six to eight weeks in perfection. This makes a fine exhibition plant, on account of its distinct colour, and its long continuance in flower.

CYRTOCHILUM.

C. maculatum.—There are a good many species in this family, but this is the only one I consider really worth growing. It is somewhat similar in habit to the *Miltonias*, and succeeds well with *Brassias* and *Oncidiums*. The pseudobulbs and leaves are dark green, and the plant is of free and compact growth, producing its long spikes of green and purple spotted flowers during the winter and spring months. Native of Mexico.

CYRTOPERA.

This is a terrestrial genus, containing a few very handsome species. They have long thin plaited dark green leaves, and resemble *Bletias*, and should be treated in the same manner. Pot them in a mixture of turfy loam, peat, and sand, but do not elevate the plant upon a cone above the rim of the pot. During the growing season they should be placed in the East Indian house; but during rest a cool and moderately dry atmosphere is best.

C. flava.—A very pretty plant, not much known at present amongst Orchid growers, having somewhat the appearance of a *Bletia*. The flower spike grows upwards of two feet high, bearing large flowers, the sepals and petals of which are rich yellow; lip rather paler. Native of Northern India.

CYRTOPODIUM.

These are large-growing plants, yet are well worth cultivating, especially where room is not an object, for they are noble-looking objects when not in bloom. I recollect well seeing a splendid plant of *C. punctatum* exhibited at Chiswick many years ago, and Dr. Lindley remarking to me what a grand specimen it was. To grow it in like manner would require a large pot and plenty of room, but it well repays the cultivator if space is allowed. The best soil is a rich fibrous loam and rotten dung to produce vigorous growth; and when the plant is strong enough to flower, after the growth is completed, give it a long rest with little water, until it shows signs of growth in spring, when water should be applied to the roots freely, and more heat given. The flowers are produced from the young growth just after starting in spring. The plants require the heat of the East Indian house when growing; but after they have finished their growth the heat of the *Cattleya* house will be sufficient.

C. Andersoni.—A very pretty Orchid, native of Brazil, and of easy culture, requiring plenty of heat and moisture when growing. The pseudobulbs are five feet high; it produces its fine spikes of yellow flowers in spring.

C. punctatum.—This is a more profuse bloomer than the preceding, and not so tall; they are both, however, noble plants, and with their fine long curved leaves make striking objects in an Orchid collection, even when out of bloom. The large spikes of flowers, yellow spotted with red, are produced in April and May. In addition to the flowers the large bracts at the base of each branch are also marked in the same manner as the sepals and petals, which greatly increases the display of colour. Native of Brazil.

Dendrobium.

This is a magnificent genus of Orchids, producing, in some of the species, flowers which are very large and delicate in colour, and delightfully fragrant; indeed, there are not many Orchids that surpass the *Dendrobiums*, for their beautiful flowers are of nearly every shade of colour, and some of them blossom very freely. Many of them, moreover, retain their leaves all the year round, whilst others are deciduous. Some of the kinds are compact in their growth, while others are straggling; and others again are very graceful in habit, especially when cultivated in baskets and suspended from the roof, for in this way their pendulous stems hang down and exhibit the flowers to the best advantage; indeed, all the drooping kinds require to be grown either in baskets, or on blocks of wood.

Though some of the *Dendrobiums* require different treatment from others, they may all be successfully cultivated with proper attention. The majority of the species are found in various parts of India and the Indian Islands, growing on the branches of trees, frequently such as hang over streams of water; whilst others are found in Australia. To grow these plants to perfection, they must have a decided season both of rest and of growth; for it is quite necessary that they should make strong stems or pseudobulbs for the production of a good crop of flowers, and it is equally essential that these growths should be well ripened. Some of the sorts are best grown in pots, with peat and good drainage; others do best on blocks of wood. Nearly all of them should be placed in the East Indian house during their period of growth, as they require a good supply of heat and moisture, with a liberal quantity of water at the roots; in fact, the moss or peat should never be allowed to get dry while they are in vigorous growth. After their growth is finished, allow them a good season of

rest by moving them into a cooler house; and during the time they are in a cool house give them very little water, only just enough to keep the stems from shrivelling. This is the only way to make them grow strong and flower freely. When they begin to grow they should be moved back into heat, and treated as described above. They generally begin to grow after their flowers have faded.

The above remarks apply to the East Indian kinds; there are, however, many of the Australian species which succeed admirably in a cool house; but some few even from that continent enjoy the East Indian treatment during the season of growth. When this is complete, they should be gradually inured to a cooler temperature, and supplied with less water, until it is entirely withheld; after this remove them to the open air for a few weeks towards the end of summer, which will thoroughly ripen their just matured stems. They should, however, be returned to the cool house before any danger from the external air is to be apprehended, and placed in a gentle heat at the commencement of winter to start them into flower if they are required to bloom during the dull months; but if not wanted before spring, keep them cool and dry all winter.

They are propagated in different ways: some of them form plants on the old stems, which should be cut off and potted; some are propagated by cutting the old stems from the plants after they have done blooming; others are increased by dividing the plants according to the directions given in the chapter devoted to remarks on Propagation.

The genus *Dendrobium* being a very large one, contains many plants of but little interest to the general amateur, though well deserving cultivation for botanical purposes. The following are among the finest in cultivation, and by their beauty or interest will amply reward the care of the cultivator:—

D. aduncum.—A rather straggling growing evergreen species from Manilla, producing its flower spikes from the old stems. The blossoms, which are small, are white and pink in colour, and appear at different times in the year, lasting two or three weeks in perfection. It succeeds best grown in a pot with peat and good drainage. This species is not so showy as many of the *Dendrobiums*, but it is well worth growing where there is plenty of room.

D. aggregatum majus.—A pretty dwarf evergreen species from India; grows about four inches high, producing its yellow blossoms on a somewhat short spike; it flowers in March and April, and lasts two weeks in bloom. This will do either on a block, or in a pot with peat, and is a desirable species.

D. albo-sanguineum.—A charming and compact-growing plant, with stems a foot high, and produces its large flowers from nearly the top. Sepals and petals creamy white; lip of the same colour, with a crimson blotch in the centre. It blooms in May and June, lasting a long time in perfection, and thrives well on a block with moss. A distinct Orchid, and a fine showy plant for exhibition. The best plants I have seen of it were in the collection of T. Dawson, Esq., near Glasgow, where it was growing in baskets with sphagnum, and seemed to be quite at home, for the bulbs were very strong. It requires plenty of water during the growing season, enjoys an abundance of light, and likes the warmest house. Native of Moulmein.

D. anosmum.—A magnificent species from Manilla, and which grows in the way of *D. superbum*, but the sepals and petals are broader, thus forming fuller and better shaped flowers, and it has no rhubarb scent. The flowers are large, and produced in pairs down the stem, the colour a beautiful rose; they last two or three weeks in perfection. Even now

this is a scarce plant; it blooms during the spring months, and is best grown in a basket, as it is drooping and deciduous.

D. barbatulum.—A charming epiphyte from Moulmein, which flowered first in the collection of the late J. A. Turner, Esq., of Manchester, and was then called *D. Fytchianum*. It grows a foot or more long, and produces clusters of flowers of the most delicate white, with a few spots of crimson. Not being a robust grower, it succeeds best on a block, and must have a tolerable rest after its growth is made.

D. Bensoniæ.—A lovely species, of somewhat recent introduction. It bears some resemblance to *D. crepidatum* in habit, producing large creamy white sepals and petals; the lip is orange, with two large black spots at the base. A handsome and desirable species. I saw some nice plants in bloom for the first time in 1867, in the fine collection of Lord Londesborough, in Yorkshire, grown by Mr. Richards. Native of Rangoon.

D. bigibbum.—A very rare and handsome species, totally unlike any other *Dendrobium* we know of, and certainly the handsomest of the Australian kinds. It is a dwarfish-growing plant, producing racemes of rich rosy purple flowers, and will sometimes continue to throw out spikes from the same stem for several successive years. It will thrive admirably in the *Cattleya* or the Mexican house, potted in fibrous peat and sphagnum moss, giving abundance of drainage, and a plentiful supply of water in the growing season; if allowed to become dry enough to shrivel, it will with great difficulty be restored. A fine variety of this plant, exhibited last year by Messrs. Brooks & Co., of Manchester, bore a long spike with numerous fine flowers. It is also beautifully figured in the second volume of Warner's "*Select Orchidaceous Plants*," from a fine specimen which flowered with Mr. Pilcher, in the

rich collection of S. Rucker, Esq., of Wandsworth. Native of the warm parts of Australia.

D. Bullerianum.—A delicate and pretty species; one of Messrs. Low's introductions from Moulmein. It resembles *D. crepidatum* in habit, but its flowers are very dissimilar, generally produced in pairs; sepals and petals white, shaded and tipped with rose; the lip is marked with a large yellow spot, which is faintly striped with orange.

D. Calceolus.—This is a large beautiful evergreen plant, about four feet high when well grown; its flowers are produced on a raceme twelve or more together, and proceed from the top of the old stems; flowers large; sepals and petals bright yellow; lip of the same colour; it blooms during the summer months, lasting several days in perfection. This is best grown in a pot with moss and peat. Native of the East Indies.

D. Cambridgeanum.—A remarkably handsome deciduous species, with a drooping habit, the stems being about a foot long. The flowers are produced on the young growth in March and April; sepals and petals bright orange; the lip has a crimson blotch in the centre. It lasts in beauty about a fortnight, and is best grown in a basket with moss, suspended from the roof. Native of Northern India.

D. capillipes.—This is a charming dwarf-growing species. In appearance it resembles a pigmy plant of *D. albo-sanguineum*, and usually attains a height of about six inches, producing short racemes of bright golden yellow flowers. Succeeds best upon a block or in a basket. Native of Moulmein.

D. chlorops.—A very pretty free-flowering species, producing white, pink, and orange flowers, which last a considerable time in bloom. Native of the East Indies.

D. chrysanthum.—A charming species from India, deciduous and pendulous, growing from three to four feet long,

generally producing flowers along the stem at the same time it is making its growth. The colour of the flowers is a bright yellow, with a dark red spot on the lip. It blossoms at different times of the year, lasting two weeks in perfection, and requiring the same treatment as *D. Cambridgeanum.*

D. chrysotis.—This plant resembles *D. fimbriatum* very much in general appearance. It grows from three to four feet high; the stems are slender and rod-like; leaves dark green; spikes slender, bearing five or six large flowers, which measure upwards of two inches across; sepals and petals long and narrow, rich deep yellow; lip large, of the same colour as the petals, or of a deeper apricot yellow, having two blotches of purplish-black towards the base, and deeply fringed at the margins. A native of Assam. A fine specimen was shown recently from Lord Londesborough's collection. T. Jones, of Manchester, has also bloomed a fine plant.

D. chrysotoxum.—An upright-growing plant, a foot or more high, and evergreen. It produces its pale yellow flowers on a spike from the top of the stem, blooms during the winter and spring months, and lasts two or three weeks in flower. Of this there are two varieties, one much better than the other: pot and peat culture suits it best. Native of Moulmein.

D. clavatum.—A remarkably handsome evergreen species from India; grows two feet high, and produces spikes of flower from the top of the stems; colour bright yellow, with a crimson spot in the centre of the lip. This is one of the finest of the yellow kinds, and it continues in perfection three or four weeks, thus making a fine exhibition plant. Pot culture in peat suits it best.

D. crassinode.—A very fine and distinct species, with stout, erect stems varying from six to eighteen inches in length, and having large swollen or knotted joints or nodes, whence the name. The flowers are stout and shining; sepals and petals

waxy white, tipped with rich purple; lip white, with an orange blotch at the base. Native of Moulmein.

D. crepidatum.—A splendid deciduous drooping species from India, and which is best grown in a basket or on a block. The stems grow a foot or more long; sepals and petals white, tipped with pink; lip stained with yellow; blooms in April and May, and continues three weeks in perfection. A species which will make a good plant for exhibition, as it may be easily retarded by keeping it cool in winter.

D. cretaceum.—A compact deciduous-growing plant, which produces its white flowers during June and July, lasting six weeks in perfection. This will do either in a pot or basket, with peat or moss. From the East Indies.

D. crystallinum.—A new and distinct species, said to be related to *D. Wardianum;* the stem-like pseudobulbs are stout, but destitute of the knotted joints so conspicuous in the last named plant; flowers of moderate size, and freely produced; sepals and petals white tipped with purple; lip orange at the base, and also tipped with purple. It is a most desirable plant. Native of Burmah.

D. Dalhousianum.—This is a beautiful Indian evergreen species; the stems, which are elegantly marked with reddish crimson, grow from four to eight feet high: it blooms from the old growth in April and May, producing numerous flowers on a spike. The flowers are large; sepals and petals of a pale lemon colour; lip the same colour, with a pink margin and two dark crimson spots in the centre: it lasts four or five days in beauty. This will grow either in a pot or basket, with moss. Specimen plants of this are scarce, and justly prized by those who possess them, as it makes a good plant for exhibition purposes.

D. densiflorum.—A magnificent compact and free-flowering

evergreen Orchid from India. The stems are erect, a foot or more high, and produce their beautiful pendent spikes of rich yellow flowers from their sides near the top; it blooms in March, April, or May, and lasts from four to six days in perfection, if kept in a cool-house. This is one of the showiest Orchids in cultivation, and one of the choicest plants we have for exhibition on account of its colour. It should be potted in peat. I have seen this with nearly one hundred flower-spikes on it at one time, in the collection of J. Day, Esq., Tottenham, under the care of Mr. Stone.

D. densiflorum album.—An Indian kind, distinct from the former, and called Schröder's variety; it grows to the same height as *D. densiflorum*, and has foliage of the same colour; flowers pink and white; lip yellow; blossoms in April and May, and continues about ten days in perfection. It grows best in a pot in peat. This is one of the finest of the genus. There are several varieties of *D. densiflorum album* sold, but none are equal to "Schröder's variety"—sometimes called *D. Schröderi;* and when the plant is known, it can be distinguished from any other by its stems.

D. Devonianum.—This is one of the finest of the genus; it is a deciduous and pendulous-growing species. The flowers are produced from the nodes, for fully three parts of the entire length of the stem, which sometimes attains the extent of four feet; they are two inches across; the sepals cream-coloured, shaded with pinkish purple; the petals are broader than the sepals, and are pink, with a deep purple stain; the lip is broadly heart-shaped, white, rich purple on the edges, with two spots of rich orange on the column, and the entire margin is most beautifully frilled. It blooms in May or June, lasts two weeks in perfection, and is best grown in a basket with moss. This plant is usually found difficult to cultivate; but the great secret is to give it plenty of water when growing,

and always to bear in mind that the red spider is its desperate enemy, often attacking the leaves; this must be diligently searched for, and, if found, kept under by syringing the foliage every day, or even twice a-day, in summer. It makes a splendid plant for exhibition. Native of Moulmein, &c.

D. Devonianum rhodoneurum.—This variety is said to last longer in flower than the normal form. The sepals and petals are streaked with dark purple; lip large and round; it is remarkably sweet, and very distinct. Native of Moulmein.

D. dixanthum.—A very pretty species from Moulmein; it is a very free grower and abundant flowerer, producing its flowers, which are of two shades of yellow, in spring.

D. Falconeri.—A magnificent plant, and one of the most beautiful of the genus; it is a pendulous grower, and so difficult to cultivate that only a few have succeeded well with it. During the growing season it likes a good supply of water; but after it has finished growth, which is by autumn, it should be kept rather dry till it begins to show flower, but must never be allowed to suffer for want of water, as it frequently grows during the winter months. Under this treatment it flowers every year, well repaying any trouble that is taken to induce it to produce its charming white and purple flowers, which open in May and June, and remain about a fortnight in perfection. One of the finest plants I ever saw of this species was grown in a pine house with Messrs. Brooks & Co., of Manchester: it had upwards of eighty very large main stems. Native of Northern India.

D. Farmeri.—A beautiful compact evergreen species from India. The stems are terete at the base, thickening upwards, and becoming clubbed and four-sided, supporting several leathery dark green leaves. This grows and flowers in the same way as *D. densiflorum*. Sepals and petals pink; lip rich yellow in the centre; it blooms in April and May, and lasts

two weeks in beauty if kept in a cool-house. This species requires the same treatment as *D. densiflorum*. There are many forms of this plant, which vary much in colour and growth.

D. Farmeri aureo-flavum.—A beautiful rich golden yellow-flowered variety from Moulmein, with just the same quadrangular stems as in *D. Farmeri*, but not quite so strong growing. It is somewhat intermediate in character between *D. Farmeri* and *D. chrysotoxum*.

D. fimbriatum.—A very showy Orchid, from India. An evergreen species, growing two or three feet long, producing its flowers in drooping spikes towards the end of the stem; the flowers are of a bright yellow, and beautifully fringed. This plant will continue flowering from the old bulbs for years; it generally blossoms during the spring months, seldom lasting more than about four days in bloom, and is best grown in a basket or pot, with peat and moss.

D. fimbriatum oculatum.—A beautiful variety of the preceding, producing its pendent flower spikes from near the top of the stems, and growing from two to three feet high; it succeeds best in a pot, in peat. The flowers are large, of a rich orange yellow, with a single deep sanguineous spot on the lip; blooms in March and April, if kept dry, and lasts ten days in perfection. This plant is very commonly mistaken in gardens for *D. Paxtoni*.

D. formosum.—A remarkably handsome compact evergreen Orchid, growing about a foot high, producing its spikes from the top of the stem, and bearing three or four blossoms together, which are frequently three inches across; sepals and petals white; lip white, with a bright yellow centre; they last six weeks or more in perfection. This may be grown either in a pot or basket, with moss or peat. It makes a splendid plant for exhibition.

D. formosum giganteum.—A magnificent variety of the preceding, much stronger in growth, and, like it, evergreen. The flowers, which are produced at the top of the stems, measure from four to five inches across; colour snow white, with bright yellow on the centre of the lip; it requires the same treatment as *D. formosum*, and remains in bloom about the same time. I have seen several fine specimens of this plant, some with as many as twenty-one leading growths, which, when in bloom, make a fine display. I saw this particularly fine in the gardens of the Duke of Sutherland at Trentham Hall, grown by Mr. Stevens. Native of Moulmein.

D. Gibsoni.—A very pretty evergreen erect-growing Orchid from India, about two feet high; the blossoms are produced on the ends of the old bulbs; the sepals and petals are rich orange; the lip bright yellow, with two dark spots on the upper part. It blooms during the autumn months, lasts two weeks in good condition, and requires the same treatment as *D. formosum.*

D. Griffithianum.—This is certainly one of the most glorious of the yellow spring-flowering *Dendrobes;* it is about double the size of *D. densiflorum* in all its parts, and its immense drooping spikes of bloom are of the richest golden yellow, and remain in perfection for a long time. This plant is very rare, and varieties are often sold for it which are much inferior to the true plant.

D. Heyneanum.—A charming deciduous species from Bombay, which grows eight inches high, and produces spikes of white flowers from the tops of the stems at different times of the year; they have somewhat the appearance of sprigs of whitethorn. It is best grown on a block, with a moderate supply of moisture, during the growing season. It continues about ten days in perfection.

D. hedyosmum.—This beautiful sweet-scented Orchid is

another of the many fine plants we have received from Moulmein. It is a plant of remarkably easy culture, producing its blossoms in spring. Its flowers, when first opening, are green or greenish white, but after a day or so they change to pure white, except the lip, which is shaded with green and yellow, and striped with orange. They are produced in pairs, and yield a delicious perfume similar to that of wallflowers. It belongs to the *D. formosum* section of the genus, which have the young growths covered with black hairs.

D. Hillii.—This is an Australian species, nearly related to the old *D. speciosum*, but the stems are fully twice the length, and more stem-like, while the racemes of flower are much longer and more graceful, and the sepals and petals are narrower and creamy white. It is a free-flowering and desirable species, and succeeds well in the cool-house after its growth is complete.

D. infundibulum.—This is a species of great beauty, distributed in the first place under the name of *D. moulmeinense*, and resembling *D. formosum* in habit of growth and flower, but surpassing it much in size and profusion of blooms. Native of Moulmein.

D. Jamesianum.—This is a very fine species named in honour of the late Mr. James Veitch. It is somewhat in the way of *D. formosum*. The stems are about a foot high, and the flowers nearly as large as those of *D. formosum*, pure white, except the lip, which is deeply stained with cinnabar red. It blooms during spring and summer. Native of Moulmein.

D. japonicum.—This is by no means an exhibition plant; but although it cannot lay claim to much beauty, its flowers, which are pure white, with a few purple spots on the lip, yield a delicious fragrance; it grows about a foot high, and coming from Japan, will make a good addition to the cool-

DENDROBIUM JAMESIANUM,

Moulmein.

house. This, according to Professor Reichenbach, is the true *D. moniliforme* of botanists, the *D. moniliforme* of gardeners being more correctly named *D. Linawianum*.

D. Jenkinsii.—A beautiful dwarf evergreen species from India, growing about two inches high; the flowers are very large for the size of the plant; the colour is a pale buff, margined with yellow; they are produced from the bulb, one or two together, and last ten days in beauty. This is best grown on a bare block of wood, suspended from the roof. A magnificent specimen of this species was exhibited at Kensington last year by Mr. Denny, gardener to Lord Londesborough.

D. Johannis.—A very pretty North Australian *Dendrobe* though not so gay as many others we are already acquainted with, yet its peculiar twisted flowers, which are brown and yellow streaked with orange, and the delicate perfume they emit, render it a very desirable plant. It will succeed best in the *Odontoglossum* house.

D. lasioglossum.—Although a somewhat small-flowered kind, this species is well deserving the attention of Orchid growers. The stems are long and slender, and it produces two or three flowers together from the joints; sepals and petals creamy white; lip yellow in the centre, and brown at the sides, streaked with purple lines. Native of Burmah.

D. Linawianum.—A delicate species, said to come from China and Japan, but this is probably a mistake arising from its being falsely identified as *D. moniliforme*, which comes from those countries; this is probably Indian, as it was originally introduced by Wallich. It is a pretty evergreen upright-growing plant, about a foot or more high, blooming all up the stem on two-year old growths, the colours being a rosy-lilac and white. It blooms during the winter months, lasting two weeks in beauty. This will grow in a basket, but I find it thrives best in a pot, with peat or moss.

D. Linawianum majus.—A fine variety of the preceding, growing the same height, but having larger flowers; the latter being four inches across, and richer in colour. I saw this in very fine condition in the splendid collection of R. Warner, Esq.

D. lituiflorum.—A charming species from India, deciduous and pendulous; it succeeds best in sphagnum, in a basket suspended from the roof. It is difficult to grow, and requires great attention as regards moisture during the growing season, but should be kept dry during winter. The flowers are large, and are produced in pairs from the nodes on each side of the stem; sepals and petals dark purple; lip white, edged with purple. Blooms in March and April, and will last two weeks in perfection.

D. longicornu majus.—A charming Indian variety, in the way of *D. formosum*, but not so strong in growth. Flowers white, except the lip, which has a yellow centre, and is fringed. Of this there are two varieties, but the one now described is the best. It produces its blossoms from the top of the stem in May and June, and they continue in perfection a long time if kept in a cool-house. Treatment the same as that for *D. formosum*.

D. Lowii.—A fine rare species from Borneo, where it was first found by Mr. H. Low, to whom we are indebted for many beautiful Orchids. A very distinct plant, growing in the way of *D. longicornu*, with upright stems a foot high, furnished with dark green foliage, and producing in racemes, from the side of the stems near the top, large flowers, measuring about two inches across, the colour bright yellow, with red markings on the upper part of the lip. This will succeed in a pot or basket, or on a block, provided it has a liberal supply of water when in vigorous growth. I saw this plant, with several other species of this genus, growing in a pine

stove, at Messrs. Brooks & Co.'s establishment at Manchester, and they were certainly growing most vigorously. Blooms in November.

D. superbum.—A fine deciduous species, from the Philippine Islands, of pendulous habit, losing its leaves just as it begins to show its flower-buds. The spreading or drooping stems grow about two feet long, from which the flowers proceed in a row on each side; they are pink, tinged with rose colour, each three or four inches across and lasting two weeks in perfection, if the flowers are kept dry. The flowers have a strong smell of rhubarb. It is best grown in a basket, with moss. This makes a noble plant for public exhibition. It is commonly grown under the name of *D. macrophyllum*, which proves to have been previously appropriated to the plant hitherto known in gardens as *D. Veitchianum.*

D. superbum giganteum.—A showy variety from Manilla, which flowers in the same way as the preceding, and about the same time. Flowers from five to seven inches across; sepals and petals beautiful rose purple; the lip the same colour, fringed and marked at the base with a pair of rich purplish red spots, and they remain about two weeks in perfection. A fine plant for public exhibition, but it requires to be kept in a cool-house to keep it back for that purpose, as it generally blooms very early.

D. superbum Huttoni.—This exceedingly rare and beautiful variety has pure white sepals and petals, whilst the lip is the colour of the normal form, saving a marginal border of white. The rhubarb scent is not so decided as in the species. It requires the temperature of the East Indian house, and is a native of the Malayan Archipelago.

D. macrophyllum.—See also *D. superbum.*

D. M'Carthiæ.—This really splendid Orchid is a native of Ceylon; it is a free grower and profuse bloomer, producing

long racemes of bright cherry red flowers, nearly as large as those of *D. superbum*, and has the advantage of lasting six weeks or two months in perfection. It is one of the finest of the *Dendrobes*. This species was first exhibited by Mr. Mitchell, gardener to R. F. Ainsworth, Esq., Manchester. It also blossomed very finely with Messrs. Veitch, at Chelsea, in 1870, a single specimen producing upwards of a hundred flowers.

D. moniliforme.—See *D. japonicum.*

D. moschatum.—A handsome species from India. This grows in the same way as *D. Calceolus*, and lasts about as long in perfection. The flowers are bright orange; lip chocolate, edged with yellow.

D. nobile.—A magnificent old species from India; a free-flowering evergreen plant of upright growth. The blossoms, which are pink and white, with a spot of crimson in the centre of the lip, are borne along the sides of the stems. It blooms during the winter and spring months, lasting three or four weeks in good condition, if kept in a cool-house. It will grow either in a pot or basket, with moss or peat. This is one of the finest exhibition plants we have; but to keep it for exhibition, it must be put in the greenhouse and shaded from the sun, and left there till it is wanted, when it must be forced into bloom. During the time it is in a cool-house give it but little water, only enough to keep it from shrivelling. This species may be had in full flower from January to June by having a number of plants treated successionally.

D. nobile intermedium.—A pretty and distinct variety, which grows in the same way as *D. nobile*, and flowers at the same time. Sepals and petals white; lip white, with a crimson spot in the centre. A desirable variety for winter decoration. A scarce plant, and one of the best.

D. nobile pendulum.—A fine variety of *D. nobile*, from India,

and one which is best grown in a basket on account of its pendulous habit. Flowers large, richer in colour than those of *D. nobile*, and produced at the same time. This is often called Rucker's variety.

D. nodatum.—A pretty Orchid, readily distinguished by its thick joints. It is a free grower, but shy bloomer, flowering several seasons upon its old growths, which are about a foot long. Sepals and petals white, clouded with yellow; lip bright orange, margined with white, and a large blood red spot at the base. Native of Moulmein.

D. macrophyllum.—A fine distinct species, which has clavate stems bearing two or three leaves. The racemes of flowers are erect; the sepals are yellow, shaded with green; petals white, and the lip yellowish green, streaked with purple; altogether a singular and very interesting plant. Native of Java. This plant, which received at first the name of *D. Veitchianum*, and is generally grown under that name, proves to be the true *D. macrophyllum*.

D. Parishii.—A beautiful flowering species, from Moulmein. It makes stems from one to two feet long, very thick throughout their entire length. Flowers generally in pairs, which are of a beautiful dark rose; the lip is lighter in colour along the centre, with dark purple markings on each side of the throat. A very distinct and altogether good addition to our *Dendrobes*. This makes a good exhibition plant.

D. Paxtoni.—A remarkably handsome Orchid from India, which is usually confounded with *D. fimbriatum oculatum*. The present plant produces its blooms at different times of the year, from nearly the top of the old bulb on a short spike in pairs, and its flowers are of a beautiful orange and brown; it lasts in perfection ten days, and requires the same treatment as *D. nobile*.

D. Pierardi.—A useful species for flowering during the winter

and spring months. It is of a drooping, deciduous habit, flowering in the same way as *D. superbum*, and requiring similar treatment; its beautiful white flowers last three weeks in beauty. Native of India.

D. Pierardi latifolium.—From India. The flowers are much finer than in the type plant, though of the same colour; it blooms in April and May. A scarce plant. I have seen it with seventy flowers on a single stem. It requires the same treatment as the former, and is a useful plant for exhibition.

D. primulinum.—A beautiful free-flowering deciduous species, from India, of pendulous growth. The flowers, which are white and pink, are produced in two rows along the stem in April and May, and they last in perfection ten days. It is best grown in a basket with sphagnum. A fine plant for exhibition. I have seen as many as sixty flowers on one stem when grown in baskets. It is very rare, and of graceful appearance.

D. primulinum giganteum.—A magnificent variety, the flowers of which are very large, of a pink and white colour; the lip is particularly fine. A free-flowering plant, which ought to be in every collection. Is best grown in a basket, as it is pendulous in habit. This is grown in some collections under the name of *D. cucullatum giganteum*.

D. pulchellum purpureum.—A pretty dwarf deciduous species from Sylhet; it loses its leaves after it has finished growing, and generally begins to show flower in February all up the stem. The sepals and petals are white, edged with green; the lip has a bright orange blotch in the centre, and is beautifully fringed. The plant does well in a basket with moss, and lasts two weeks in bloom.

D. sanguinolentum.—A good distinct evergreen species, the stems and leaves of which are violet or lilac-coloured.

It grows some three or four feet high, and blooms from the end of the old stems, which continue flowering for years; sepals and petals fawn colour, tipped with spots of deep violet; lip of the same colour. It blooms during the summer and autumn months, and lasts two weeks in good condition. This will do either in a basket or pot, with peat or moss.

D. sanguinolentum superbum.—This plant is a great improvement upon the previous one; handsome as that is, this is much stronger in growth, producing longer spikes of very much larger flowers, which are of a creamy white, tipped with dark rich purple. This variety was sent me a few years ago from Borneo, with a consignment of *Phalænopsis.*

D. senile.—This is another of the productions from that rich land of Orchids, Moulmein, and is one of the most curious, the stem and leaves being densely covered with white hairs; its flowers are of a bright yellow colour, produced in pairs, and continue in full beauty for a considerable time. When we get it imported in quantity, it will, I think, become a general favourite, although its constitution is probably rather delicate.

D. Tattonianum.—A very pretty Orchid from North Australia; it is of easy culture and sweet-scented. It seems to be a small-growing species attaining some three inches in height, and it makes a flower-stem about a foot long; the sepals and petals are yellow and white, and the lip bluish or mauve. It is a very singular and desirable small-flowering species.

D. taurinum.—A vigorous-growing magnificent species from India, often attaining a height of five feet, with upright stems. The sepals are pure white, and the petals reddish brown, curling and spread out like the horns of a bull, whence the name; lip white, margined with purplish violet. It is best grown in a pot in peat. Of this a fine plant may be seen in the collection of S. Rucker, Esq., Wandsworth, under the care of Mr. Pilcher.

D. thyrsiflorum.—A fine showy species, in habit like *D. densiflorum*, but stronger, with the apex of the bulbs slightly yellow, and producing splendid clusters of golden and white flowers. From Moulmein.

D. tortile.—A charming evergreen species from Java, growing about two feet high; it blooms in the same way as *D. nobile*, and requires the same treatment. The flowers are pale yellow, indeed almost white; it blooms in May and June, lasting a long time in perfection.

D. tortile roseum.—This is a beautiful variety of the preceding species, resembling it in every respect, saving the colour of its flowers, which are in this plant a delicate rose, shaded with yellow. A very desirable variety; blooms in May and June. Native of Java.

D. transparens.—A beautiful small-flowering Indian Orchid, which blooms in the same way as *D. nobile*. The flowers, which grow in pairs along the stems, are of a pale, transparent, pinkish lilac, stained in the middle of the lip with a blotch of deep crimson; it blooms in May and June, and does well grown in a pot with peat or moss.

D. triadenium.—A delicate Orchid from India, of upright growth, and evergreen; it produces its white and pink flowers on a small spike from the old stems, and lasts two weeks in bloom; flowers at different times of the year, and is best grown in a pot with peat.

D. Veitchianum.—See *D. macrophyllum.*

D. Wallichianum.—This is a beautiful kind, resembling *D. nobile* in general appearance; it has, however, much taller stems, darker foliage, and richer coloured flowers. It blooms during the winter and spring months, and may be retarded until the summer with care, when it makes a noble and valuable specimen for exhibition purposes. The treatment recommended for *D. nobile* suits this plant also. Native of the East Indies.

D. Wardianum.—A magnificent species. A splendid match for the beautiful *D. Falconeri*, which it somewhat resembles in its thickened and knotted stem. It is pendulous in growth, making strong stems from two to three feet long, on which the flowers are produced in twos and threes, each flower measuring upwards of three inches and a half in diameter. The colour of the sepals and petals is white, tipped with magenta; the lower part of the lip rich orange, spotted on each side with crimson. It blooms about May, and continues a considerable time in perfection; thrives best suspended in a basket, or on a block. This fine plant was figured in Warner's "*Select Orchidaceous Plants*" from a specimen flowered by T. Ward, Esq., of Southampton. Native of Assam.

D. Williamsoni.—This plant belongs to the nigro-hirsute section of this genus, and is somewhat difficult to establish. The stems are erect, bearing strap-shaped leaves clothed with short soft hairs; flowers large, ivory white, slightly tinged with brown, and bearing a large blood-red spot on the lip. Native of Assam.

D. xanthophlebium.—This species grows about a foot high, making very small stems; it produces its flowers in pairs upon the old stems; sepals and petals white; lip medium-sized, spotted with orange, and having a white margin. This species was, when it first bloomed, named *D. marginatum*. It is a native of Moulmein.

DENDROCHILUM.

A small genus of graceful growing plants. They are small and compact in habit, and ought to be in every collection, having evergreen narrow leaves about six inches in length, and small pseudobulbs; their flower spikes, which are graceful and pendulous, are produced from the top of the bulbs, hanging down in long elegant racemes. These plants should be grown

in the East Indian house, potted in peat and sphagnum, with good drainage. They like plenty of water during the growing season; but after having finished their growth, less will suffice. They are propagated by dividing the pseudobulbs just as they begin to grow.

D. filiforme.—A charming species, which grows about six inches high. The flowers, which are produced in June and July, are of a yellowish green hue, and are prized for their gracefully drooping habit. When arrived at a good size it makes a nice exhibition plant. This is beautifully flowered by Mr. Stone, gardener to J. Day, Esq., a great number of the elegant flower spikes hanging round his large specimen. Native of Manilla.

D. glumaceum.—Another pretty species, with small evergreen foliage, and producing graceful spikes of greenish white flowers, which are delicately scented; it flowers in spring, and continues three or four weeks in perfection. Native of the Philippine Islands.

EPIDENDRUM.

Many of the species of this large genus are scarcely worth cultivating, excepting for botanical purposes. Some of these small-growing and small-flowered kinds are, however, sweet scented. Growers of Orchids have been more deceived in buying *Epidendrums* than any other group of these plants. The bulbs of many kinds are so nearly alike that it is very difficult to tell what they really are until they flower, and they often require to be kept several years before this occurs; and then, instead of something good, they produce frequently only dingy green flowers about the same colour as the leaves. Some of these insignificant flowers are nevertheless very fragrant, and will perfume the whole house in which they are grown. There are, however, some beautiful species among them, the

flowers of which are very distinct in colour. The following comprise all the best sorts that I know. They are all evergreen, and compact in their habit, except *E. cinnabarinum*, *E. crassifolium*, *E. rhizophorum*, and a few others, which are tall-growing, with long slender stems, clothed with small leaves from top to bottom. The other sorts have short round pseudobulbs, with long narrow leaves, except *E. aurantiacum*, *E. bicornutum*, and *E. Stamfordianum*, which grow more in the way of the *Cattleyas*, with upright bulbs, having two or three short leaves on the top. They all produce their flowers from the top of the stem or bulb, except *E. Stamfordianum*, in which they rise from the base.

These plants will all do in the Mexican house, and may be grown on blocks of wood; but pot culture is the best for the majority of the species; the drainage must be perfect, and sphagnum moss and peat should be used in about equal parts. They require a season of rest, with the same treatment as the *Cattleyas*, excepting that they need less heat. They are propagated by dividing the plants, as described in the remarks on Propagation.

E. alatum majus.—A pretty species from Mexico. Its flowers are produced on spikes in June or July, and are pale yellow, the lip striped with purple, and it continues five or six weeks in beauty. There are several varieties of *E. alatum*, but the one here described is the only one worth the attention of amateurs.

E. aloifolium.—A pretty species when well grown, and a native of Guatemala. The plant is pendulous in habit, and very distinct from any of the other *Epidendrums*, having curious and narrow-pointed leaves. The flowers, which are large, proceed from the top of the bulb, one or two together; the sepals and petals are greenish yellow and brown, and the lip is of a pure white. It blooms during the summer months,

and lasts long in beauty. This plant is best grown in a basket with moss.

E. aurantiacum.—A distinct species from Guatemala. This plant is similar in growth to *Cattleya Skinneri;* the pseudo-bulbs so nearly resemble those of that plant, as to lead to its being often mistaken for it. It grows a foot high, and produces its flowers from a sheath at the top of the bulb; the flowers are of a bright orange, with the lip of the same colour, striped with crimson. It blooms in March, April, and May, lasting six weeks in perfection if kept in a cool-house. There are two varieties of this plant, both of which I have had growing in the same house under the same treatment. The best variety opens its flowers freely, while in the other they keep nearly closed—a peculiarity which renders the latter not worth growing.

E. bicornutum.—A remarkably handsome Orchid from Guiana, growing about fifteen inches in height. The flower spike proceeds from the top of the bulbs, sometimes producing on one spike as many as twelve beautiful flowers, each about two inches across, of a pure white, with a few crimson spots in the centre of the lip. It blooms in April and May, lasting two or three weeks in beauty. This is rather a difficult plant to grow. The best plant I ever saw was grown on a block of wood without any moss, and flowered five or six years in succession; but in the seventh year it seemed to lose its vigour, and never flowered afterwards, probably because the block began to decay and get sour. There are some very fine plants in the collection of A. Turner, Esq., of Leicester. I have seen plants do well in pots with peat and good drainage.

E. Brassavolæ.—This very fine and remarkable species is a native of Central America, and will succeed well in the Mexican house. It derives its name from the resemblance in shape

which the flowers bear to those of a *Brassavola*. The sepals and petals are of a rich yellowish brown, while the lip is in part white, the rest being of a beautiful mauve. The flowers are four inches in diameter, borne upon long and many-flowered spikes, very durable, and sweet-scented in the evening. The plant in its general habit resembles a large form of *E. prismatocarpum*.

E. cinnabarinum.—A tall-growing plant, from Pernambuco. It grows four feet high, and blooms from the top of the stem; the flowers, which are bright scarlet, and are produced in abundance in May, June, and July, continue to be produced for two or three months.

E. cnemidophorum.—This is a rare and pretty cool-house Orchid, a native of Guatemala, where it is found up to an elevation of nearly 8,000 feet. It is one of those plants which the lamented Mr. Skinner had so much difficulty in getting home alive. It is a strong-growing plant, throwing out large fleshy roots, and making stout stems from three to five feet high. The leaves are about eight inches long, glossy, green, and somewhat sharp-pointed. The flower spike is terminal, and about a foot long, producing a cluster of light yellow flowers, spotted with brown inside, and pure white at the back; the lip is white shaded with rose, and deeply divided.

E. Cooperianum.—A beautiful species from Rio, growing from two to three feet high. The flowers grow in racemes, and are brownish yellow, with the lip large and bright rose-coloured. It is named in compliment to Mr. Cooper, of the Old Kent Road. A most desirable species, and of easy culture in the *Cattleya* house.

E. crassifolium.—This is not so ornamental as many of the species of this genus, but it is worth growing on account of its distinct colour. It is rather tall, attaining a height of some

two or three feet, and produces its rose-coloured flowers in profusion in March, April, May, and June, continuing to bloom for three or four months, which makes it a valuable plant for decoration.

E. dichromum.—A beautiful Orchid from Bahia. It produces large panicles of flowers two inches in diameter, light rose-coloured, with the lip a rich crimson. A most desirable species, which is also known under the name of *E. amabile.*

E. dichromum striatum.—A very beautiful variety, in which both sepals and petals are white, and all the veins marked out by radiating deep purple lines; it flowered in the collection of T. Dawson, Esq. Native of Bahia.

E. eburneum.—A pretty Orchid from Colon, in Panama. It grows two feet high, and has large leaves of a deep green colour, placed alternately upon the stems. The raceme is terminal, producing four to six flowers, which have a very large ivory white lip; it is well worthy of general cultivation.

E. erubescens.—A plant of very distinct habit, making long woody rhizomes, which root from the under side, and bear the pseudobulbs at intervals of about six inches. The flowers are produced upon branching spikes; sepals and petals broad, and of a beautiful delicate mauve; lip a darker shade of the same colour, and yellow at the base. This species has flowered with Mr. Sherratt, gardener to J. Bateman, Esq., and also in the collection of T. Salt, Esq., Bradford. It lasts in bloom for six or eight weeks, and is certainly a very desirable species. This plant is difficult to grow. We have found it thrive well on long blocks of wood in the cool-house with *Odontoglossums,* and always kept damp at the roots.

E. Hanburyanum.—This is not so showy as many of the species of *Epidendrum,* but is worth growing on account of its pleasing colour. Sepals and petals deep purple; lip pale rose.

It blooms during the spring months, lasting long in beauty. Native of Mexico.

E. macrochilum.—A beautiful species from Guatemala. The sepals and petals are brown; the lip large, pure white, with a purple blotch at the base. It blooms in April and May, and lasts five weeks in good condition if the flowers are kept free from damp. It is more accurately called *E. atropurpureum.*

E. macrochilum roseum.—A beautiful variety of the former. The lip is large and wholly dark rose colour; it blooms at the same time, lasts long in beauty, and is a most desirable plant.

E. myrianthum.—A charming plant from Guatemala, very rare in cultivation, of tall but graceful habit, with dense spikes of rich magenta flowers. It will not bloom if subjected to much heat: the cool-house, therefore, will suit it best.

E. nemorale majus.—A compact evergreen species, with pseudobulbs four inches high, bearing on the top two leaves a foot long, of a light green colour, and producing panicles of flowers which are sometimes three feet long, and, when expanded, have a remarkably handsome appearance. It makes a fine exhibition plant, on account of its being well adapted for travelling, and from its distinct and pleasing colour, which in the sepals and petals is delicate rosy mauve, the lip being white in the centre, with three short red lines, and bordered with deep rose. It is found growing on rocks and trees, and will do well in the *Cattleya* house. Native of Mexico.

E. paniculatum.—This is a tall-growing plant, with thin stem-like pseudobulbs, which attain a height of some three or four feet, and are clothed with narrow dark green leaves. The flowers are produced in a drooping branched panicle upwards of a foot long, bearing a profusion of elegant pale rose-coloured blooms. It will succeed in a cool-house. Native of Peru, &c.

E. phœniceum.—A fine species from Cuba. The sepals and petals are purple; the lip of the same colour, mixed with pink and crimson. It blooms during the summer months.

E. prismatocarpum.—A splendid Orchid, and certainly one of the best of the genus. It grows about twelve inches high, producing short bulbs, and evergreen foliage. The spikes are produced from the top of the pseudobulbs, and bear each about fourteen flowers; sepals and petals creamy white, spotted with black; lip pink. It blooms in June and July, and will last several weeks in perfection. There are several varieties of this species.

E. rhizophorum.—A pretty but shy-flowering evergreen scandent Orchid, often reaching ten feet in height. It is best grown in a pot in peat, with good drainage. When the plant becomes tall, it should be trained round some sticks, which is the best way to make it flower. The flowers, which are produced in long racemes from the top of the stem-like growths, are of a bright orange scarlet; the same spike will keep in beauty for three months. I have known Mr. S. Woolley, of Cheshunt, to have the same plant in flower for twelve months.

E. Stamfordianum.—A small-flowering species from Guatemala, producing its flowers in great abundance on a branching spike; they are of a greenish yellow, thickly spotted with brownish purple. It blooms in April and May, lasting a considerable time in perfection. There are two varieties of this plant: one has much brighter coloured flowers than the other; the best form is characterised by its longer and thinner bulbs.

E. syringothyrsus.—An extremely handsome cool-house species. The slender stems attain a height of about three feet, and are clothed with distichous leaves, which are about

six inches long, and light green. The flowers are produced in branching panicles, which bear from seventy to eighty flowers; sepals and petals light purple; lip white, and pink in front. Native of Peru.

E. vitellinum.—A small-growing plant, but one of the finest of the genus. A very distinct Orchid, the pseudobulbs and leaves glaucous. It blossoms during the greater portion of the year, some plants throwing up their spikes in summer and others in winter, lasting six weeks or more in good condition; sepals and petals rich orange scarlet; the lip bright yellow. This is best grown in the cool-house with *Odontoglossums*, and requires plenty of moisture at the roots. Amongst the numerous fine examples of this species which I saw in Mr. Dawson's collection, at Meadow Bank, was one magnificent plant, with twenty-five spikes of bloom expanded, forming a charming spectacle. Native of Mexico.

E. vitellinum majus.—This is of the same colour as *E. vitellinum*, the only difference being in the flowers, which are considerably larger, with the sepals and petals broader; the flowers are also very thick and fleshy, and last in bloom an immense time. It usually flowers during the summer months, but sometimes sends up its brilliantly coloured blooms during winter. A very rare plant. Same treatment as the former.

EPISTEPHIUM.

E. Williamsii.—This beautiful plant is nearly allied to the *Sobralias;* indeed, it has been sent home from Bahia, its native place, under the name of *S. sessilis.* It makes a fleshy fibrous underground root, and grows upwards of a foot high; the leaves are very dark and shining; the flowers large, of a bright reddish purple, six or eight upon a terminal spike. Being a terrestrial species, it should not be elevated above the rim of the pot. It succeeds best potted in good fibrous

loam and sand, with good drainage and a liberal supply of water, and will do well in the *Cattleya* house.

Eriopsis.

E. biloba.—A pretty species from South America, and the only one with which I am acquainted that is worth growing. It is evergreen and of upright habit, attaining a height of ten or twelve inches; foliage dark green; flowers produced from the side of the pseudobulb, on a spike ten inches long; sepals and petals yellow and deep orange; lip white, spotted with dark brown; upper part orange. This succeeds best potted in peat, with good drainage, and it requires a liberal supply of water at the roots, with full exposure to the sun: it is propagated by dividing the bulbs. The coolest house will suit it.

Galeandra.

Some of the species belonging to this genus are small-flowered, and possess little beauty to attract the attention of amateur Orchid growers; a few, however, have large and beautifully coloured blooms and are well deserving general cultivation. They are deciduous and upright-growing plants, with slender stems, producing their flower spikes from the top, just as they have finished their growth. These are best grown in pots, with peat and good drainage, in the East Indian house, and should have a good supply of water at the roots during their period of growth. Afterwards they should be moved into the *Cattleya* house, placed near the glass, and not kept too dry. When growth commences, they should be treated as before directed. *Galeandras* are somewhat difficult to cultivate, and require strict attention in the growing season in regard to keeping their leaves free from the red spider and the thrips. This may be done by syringing them twice a day in warm weather, which will keep it under.

G. Baueri.—A desirable dwarf species from Guiana; the pink and purple coloured blossoms are produced on a drooping spike, in the months of June, July, and August, and continue in perfection a long time. This makes a fine plant when well grown, and it is worth all the care that can be bestowed upon it. When Mr. Schröder's collection was intact, he invariably exhibited this plant in splendid condition, at Chiswick; but I have never seen it so good since, which is to be regretted. Indeed it is now a rare plant, but I trust we may soon get some fresh importations.

G. cristata.—A desirable species from South America; it grows about eight inches high. The flowers, which are produced on a drooping spike, are of a pink and dark purple colour; they appear in July and August, and last four or five weeks in perfection.

G. Devoniana.—A beautiful slender Orchid from South America; it grows about two feet high. The blossoms, which are produced in pendant spikes from the top of the bulbs, are white, beautifully pencilled with pink; it blooms at different times of the year, and remains a long time in beauty. I have only seen this grown well in the fine collections of S. Rucker, Esq., Wandsworth, and the late J. A. Turner, Esq., Manchester. It is beautifully figured in the first series of Warner's "*Select Orchidaceous Plants.*"

GONGORA.

This is a somewhat despised genus with the majority of Orchid growers, yet it contains many very interesting and beautiful flowered species; and as nearly all of them are fragrant, they have an additional claim to our attention. In the earlier days of Orchid culture one often saw fine specimens of *Gongoras*, but latterly they seem to have become quite a neglected race. These plants are compact growing and ever-

green, producing long pendulous racemes of richly-coloured flowers, which, in some instances, are very grotesque in appearance. As the flower spike is pendulous and produced from the base of the bulbs, the plants are best grown in baskets with peat and moss; indeed they are extremely liable to injury if grown in pots. The temperature of the cool end of the *Cattleya* house suits them well; they enjoy a liberal supply of water during summer, both on the foliage and to the roots, but a very little will suffice in winter. The bulbs, however, should not be allowed to shrivel.

G. atropurpurea.—This is an old but very handsome species, compact in growth, with ribbed pseudobulbs and light green leaves; racemes long, springing from the base of the bulbs, pendulous, and bearing a profusion of dark purple flowers. It blooms during summer. Native of Trinidad.

G. bufonia major.—Similar in habit of growth to the preceding; indeed, they are mostly about the same size both in pseudobulbs and leaves; in this species, however, the flowers differ considerably, being beautifully variegated with purple and white. From Brazil.

G. maculata.—This grows about eighteen inches high; pseudobulbs ribbed; leaves dark green; racemes upwards of a foot in length, pendulous, and produced from the base of the bulbs; flowers very showy, yellow, spotted with rosy red. It blooms in May. Native of Demerara.

G. maculata alba.—A handsome and distinct form of the preceding, which it very much resembles, but the pseudobulbs are more deeply ribbed; the flowers, which are pure white, with a few spots of rose on the lip, are produced about the month of May. Native of Guiana.

G. portentosa.—This is a compact-growing species, not differing greatly from the others in habit; it produces an abundance of its gay flowers from the base of the pseudo-

bulbs, the sepals being rich yellow, whilst the petals and lip are deep purplish violet. Native of South America.

GRAMMATOPHYLLUM.

A small genus of somewhat large-growing plants, all of which are worth growing where space can be allotted them. One of them makes a magnificent specimen, having a noble palm-like appearance; but it requires considerable space to grow it in perfection, and it is, unfortunately, a shy bloomer. I have seen plants grown for eight years without flowering; indeed, it has only once or twice been flowered well in this country—once by Mr. Scott, when gardener to the late Sir George Staunton, and again by Mr. Carson, Nonsuch Park, Cheam; the latter had it very fine. This plant had been in the Cheam Collection for many years, but was sold a few years ago, and is now in the possession of S. Mendel, Esq., of Manchester, with whom I hope to see it flower again. The plants require to be well grown, and after making a few strong growths, should have a decided season of rest; they require to be grown in peat, in a pot of good size, and with good drainage; a liberal supply of water at the roots must also be given during the growing season. The East Indian house is the proper place in which to keep them throughout the year. They are propagated by dividing the bulbs.

G. Ellisii.—A charming species, brought from Madagascar by the Rev. W. Ellis, of Hoddesdon, in compliment to whom it is named; it is a smaller-growing species than *G. speciosum*, and more free flowering, producing spikes of blossoms from the base of the bulbs along with the young growths; the flowers are large, of a yellow and brown colour, and they remain some time in beauty. This may be made to succeed on a block suspended from the roof, provided it has a plentiful supply of water.

G. speciosum.—A magnificent Orchid from Java, but, as above stated, somewhat shy blooming; it grows from five to ten feet high, producing upright spikes from the bottom of the bulbs, which are very large; the flowers are also large, and of a beautiful yellow and brown colour. It blooms during winter, and will last a long time in perfection if the flowers are kept dry.

Helcia.

H. sanguinolenta.—A rare and very handsome Peruvian plant, with somewhat the habit of *Trichopilia*, producing flowers two inches in diameter; sepals and petals yellowish, blotched with reddish brown; lip large, white and striped with crimson. This is a small compact-growing evergreen plant, and succeeds well in the cool-house; it is best grown in a pot with peat, moss, and good drainage, keeping it moist in the growing season; it is the only one of the genus I have seen.

Houlletia.

A small genus of Orchids, which are well worth cultivating, on account of their distinctness of colour. They grow best in pots, in peat with good drainage, and like a liberal supply of water during the growing season; they are propagated by dividing the bulbs just before they begin to grow.

H. Brocklehurstiana.—A distinct species from Brazil; it grows eighteen inches high, and has short round bulbs, and broad pale green leaves. The flower spikes are produced from the side of the bulbs; the blossoms measure from three to three and a half inches in diameter, the petals being orange brown, enriched with darker spots, the lip yellow, and also spotted with dark brown.

H. odoratissima.—A handsome species from South America; grows eighteen inches high, and has light green leaves; the flower spike rises from the side of the bulb; blossoms two

and a half inches across; petals orange brown, striped with a lighter colour; lip white, tipped with yellow.

H. odoratissima antioquiensis.—A very fine variety of the preceding, with dark green pseudobulbs and leaves; spike erect, bearing many flowers; sepals much broader than the petals; and like them deep blood-red; the curious lip, which is very long and somewhat sagittate, is white, faintly tinged with pale yellow. It succeeds in a moderately cool temperature. Native of Columbia.

H. tigrina.—A showy and very pretty species of this somewhat neglected genus; the pseudobulbs are about two inches long, somewhat ovate, supporting long dark green leaves, which are blunt at the ends; sepals greenish yellow, barred with brown; petals smaller, rich yellow, barred with crimson; lip white, dotted with brown, and barred with light purple. Native of Columbia.

HUNTLEYA.

Under this heading are included plants distributed through the following genera:—*Huntleya, Warrea, Warscewiczella, Batemania, Zygopetalum,* and *Pescatoria.* They are all very similar in their general appearance, and not a little diversity of opinion exists respecting them. I have therefore determined to retain them all under the old and familiar title of *Huntleya* for the present. Several of them bear very showy flowers, and are of easy culture, if they get the treatment required, but they are often killed by having too much heat. I find they do best in the cool end of the *Cattleya* house, with plenty of water all the year round, for they seem never to require any rest. The attention that may be given them will well repay the cultivator by a profusion of their elegant, curious, and delicately scented flowers. The plants have evergreen foliage, about ten inches high, and are compact in their growth, with small pseudobulbs, from which their flowers

proceed. The blossoms are large, produced singly upon stalks which stand about four inches high. These are best grown in pots, with peat and moss, and good drainage.

H. albido-fulva.—This is a robust-growing plant for this genus. The leaves are light green, and erect; flowers large, produced singly; sepals and petals white, tipped with copper colour; lip white, tipped with red, and much crested at the base. It is a distinct species from Brazil.

H. candida.—An extremely rare species of dwarf habit, seldom growing more than eight or nine inches in height. The sepals and petals are pure white; the lip purple, edged with violet, with a few red veins at the base. This handsome little plant is a native of Bahia. Professor Reichenbach now refers this species to *Zygopetalum*, formerly to *Warscewiczella*. Lindley included it in *Warrea*.

H. cerina.—This beautiful species was first flowered by S. Rucker, Esq.; it is slow in growth, but of easy culture, producing at various seasons its delicate yellow and straw-coloured flowers, which are of very long duration. It is a native of Veragua, growing at an elevation of 8,000 feet. It is sometimes referred to *Zygopetalum* and *Pescatoria*.

H. marginata.—A beautiful species from South America, which grows about ten inches high, and has evergreen foliage; the flowers are produced from the side of the bulbs; colour, pinkish purple and white; blooms at different times of the year, and continues a considerable time in beauty. This is one of the species sometimes referred to *Warscewiczella*; it is also called *Warrea quadrata*.

H. Meleagris.—The best of the genus, from South America. The flowers are large, yellow and brown in colour; it blooms in June and July, and lasts a long time in beauty. A scarce Orchid, sometimes called *Batemania Meleagris*.

H. velata.—A very beautiful and fragrant species from New

Grenada, growing about a foot high. The sepals and petals are yellowish white; lip yellowish white, margined with crimson, and marked with purple, and very large. This is one of the *Warscewiczellas*.

H. violacea.—A curious species from Guiana. It produces its solitary violet-coloured flowers at different times of the year, and keeps in bloom four or five weeks. It has been called *Zygopetalum* and *Pescatoria*.

H. Wailesiana.—This is a very elegant little species, with dark evergreen leaves. The flowers are of moderate size; sepals and petals white; lip white, stained along the centre with violet; it blooms during the autumn months, lasting long in perfection. Native of Brazil. It is sometimes included in *Zygopetalum*, and has also been referred to *Warrea*.

H. Wallisii.—In general appearance this superb species resembles *H. cerina*, but the flowers are much larger; the ground colour is a rich cream, and the sepals and petals are tipped with bluish violet, the base of the column being dark violet. It is a fine addition to this beautiful genus, requiring somewhat cool treatment. It is also known by the names of *Zygopetalum Wallisii* and *Pescatoria Wallisii*. Native of Ecuador.

IONOPSIS.

I. paniculatus.—A charming small free-flowering Orchid, and one that ought to be in every collection. The leaves are six inches high, and proceed from very small pseudobulbs. The flower spikes, which are branching, proceed from the axils of the leaves, and are about ten inches long, the blossoms being of a pretty blush white, pencilled with light rose, and produced twice a year. The plant succeeds best on a block, with a little live sphagnum moss round the roots, which require to be kept moist nearly all the year round. I have found it do well in the coolest house suspended near the

glass, where it continues in bloom for several weeks at a time. This is a difficult plant to grow, for we seldom see it doing well. I often find it flower itself to death.

Lælia.

This is a most lovely genus of plants, most of the species being compact in their growth, with evergreen foliage, resembling in many respects the genus *Cattleya*, to which some of them are equal in the beauty of their flowers. They produce their blossoms, which are large, distinct in colour, and very handsome, on spikes of varied length, from the top of their pseudobulbs. These plants merit a place in every collection, and will amply repay the cultivator for any care they may require; indeed, the *Lælias* are among our finest Orchids, whether for winter or summer blooming.

Some of the species are best grown on blocks of wood with moss; others thrive well in pots with peat and good drainage. The large-growing kinds are best grown in pots, and require the same treatment as *Cattleyas*. Those on blocks require more water, and are best grown in the *Cattleya* house, except some which do not require so much heat to grow them to perfection. They are propagated in the same way as *Cattleyas*.

L. acuminata.—A pretty, delicate-flowered, and compact-growing plant from Mexico. The sepals and petals are white; the lip white, with a dark blotch on the upper part. It blooms in December and January, and lasts two or three weeks in beauty.

L. albida.—A lovely compact-growing species from Oaxaca. The sepals and petals are white; the lip pink, with stripes of yellow down the centre. It blossoms in December and January, lasting a good time in beauty. There are two varieties of this plant. The best is called *superba*. In the latter, the flowers are much larger than in the ordinary form of *L. albida*.

L. albida Mariana.—A pretty variety of the preceding species, of compact habit, with pale green foliage; sepals and petals flesh colour, changing to salmon; lip mauve, with buff stripes. A desirable plant, blossoming during winter, and as it continues in bloom four or five weeks, it is a valuable addition to a collection when flowers are generally scarce. It requires to be grown in a cool-house.

L. anceps.—A remarkably handsome Orchid from Mexico. The flowers are three or four inches across, and last a month in perfection, if kept in a cool dry house; sepals and petals rose lilac, the lip a beautiful deep purple. It blooms in December and January. Of this there are several varieties, one of which is called *L. Barkerii.*

L. anceps Dawsoni.—This beautiful variety flowered in the autumn of 1867 for the first time in this country, with T. Dawson, Esq., of Meadow Bank, the great emporium for Orchid gems and novelties; it was also exhibited, in January 1868, at South Kensington, by Mr. Hodges, gardener to S. Wright, Esq., Gravely Hill, Birmingham, and is a great acquisition amongst our winter-flowering Orchids. The plant does not present any special character distinguishing it from the species, except in colour. The flowers are produced two or three together, on stems two feet long or more; sepals and petals pure white; exterior of lateral lobes of lip white, interior clothed with purple lines radiating from the base, the yellow ridge under the column, common to the species, being prominent; the lower or expanded portion of the lip is undulating and recurved, white towards the lobes, and purple near the extremity, the whole being broadly margined with white. Native of Juquila in Mexico.

L. anceps delicatum.—A distinct and handsome form, producing from four to six flowers upon each spike. The sepals and petals are white, stained with rosy purple; the lip white,

suffused with reddish purple and shaded with violet, the throat being orange yellow. This variety is deserving the attention of all cultivators of these plants, on account of the numerous flowers borne upon each spike. Native of Mexico.

L. autumnalis.—A lovely and showy Orchid from Mexico. It produces its blossoms on a spike twelve inches high or more, and often bears as many as nine flowers on a single spike. I have bloomed it with more than that number. The sepals and petals are of a beautiful purple colour; the lip rose and white, with yellow in the centre. The flowers are four inches across. It blooms at the same time as *L. anceps*, lasting about a fortnight in good condition. There are several varieties of this plant, some of them much richer in colour than others; one fine variety of this species, in which the flower was large, and the colour very deep, was sent me by Mr. Kemmery, gardener to E. G. Wrigley, Esq., of Broadoaks, Bury.

L. Brysiana.—A fine showy Orchid from Brazil, and very distinct. It grows like *Cattleya crispa*, with dark evergreen foliage; and the flowers are large, produced three or four together during the summer months, and lasting three weeks in perfection; sepals and petals beautiful light rose, spotted and veined with a darker colour; lip dark crimson. *L. purpurata* is often grown for this species, but it is quite distinct.

L. cinnabarina.—A charming distinct species from Brazil, very compact in growth; flowers reddish orange, produced on upright spikes, many together. It blooms in March, April, and May, lasting six weeks in beauty. This makes a good plant for exhibition on account of its unusual and very distinct colour.

L. crispilabia.—This very pretty plant is nearly allied in habit to *L. cinnabarina*, though a very distinct plant, in the colour of both pseudobulbs and leaves. It has been in culti-

vation under the name of *L. Lawrenceana* for many years. It succeeds very well with other *Lælias*, liking plenty of light, and never being allowed to get perfectly dry; it grows about a foot high, bearing on its flower spikes four to six medium-sized delicate purple flowers, which continue in perfection for several weeks. Native of Mexico or Brazil.

L. elegans.—A magnificent species from Brazil, with evergreen foliage. It grows about two feet high or more, and blooms at different times of the year. Of this species there are many varieties, and shades of colour varying from white to light rose, and pink, crimson, and carmine; in the typical variety the sepals and petals are pale rose, the lip a brilliant purple. It lasts about three weeks in perfection.

L. elegans Warneri.—A magnificent variety of *L. elegans*, which grows to about the same size. Sepals and petals light rose; lip rich crimson; it blossoms in June and July, and will last in perfection three or four weeks. Very rare, and one of the finest of its class; it is also a fine exhibition plant.

L. flava.—A very distinct species from Mexico; it grows in the same way and blooms at the same time as *L. cinnabarina.* The colour of the flowers, which last three weeks in perfection, is yellow. Native of Brazil.

L. furfuracea.—A fine variety from Mexico, resembling *L. autumnalis* in growth, and attaining a height of ten inches, with light green foliage. The flowers are produced on upright spikes from the top of the bulb during autumn, and are individually five inches in diameter, the colour dark purple, with a dark rose lip. This plant is somewhat difficult to cultivate, but I have seen it growing most luxuriantly under the care of Mr. Baker, gardener to A. Bassett, Esq., who had a very large example of it, and it flowered well with him every year; it was grown in a pot suspended from the roof of the Mexican house.

L. gigantea.—This is one of the finest of its genus, and is a free-growing and free-flowering plant, in general habit like *L. elegans.* The flowers measure six inches in diameter; the sepals and petals are of a delicate lilac, beautifully spotted with rose purple; the lip is of the same colour, but more intense. It comes from Brazil, and succeeds well with the other *Lælias.* There is a good figure of it in Warner's "*Select Orchidaceous Plants.*"

L. grandis.—A very distinct plant, from the neighbourhood of Bahia. It grows about a foot high; the stems are small at the base, and thick at the upper part, from which rises one rigid dark green leaf; the sepals and petals are of a light nankeen colour; the lip is white in the throat, edged and veined with lilac and purple. It flowers during the summer, and will remain in perfection for a long time, if kept from the damp.

L. irrorata.—An elegant plant, the pseudobulbs of which usually attain a height of eighteen inches, bearing two or three leaves on the summit; flowers about five inches in diameter; sepals and petals pure white; lip rich crimson, shaded with purple and margined with clear white. It makes a very pretty exhibition plant, flowering in June and July. The finest variety of this plant which I have seen bloomed in the rich collection of R. F. Ainsworth, M.D., at Lower Broughton, Manchester, under the care of Mr. Mitchell, and it is a plant no collection of Orchids should lack.

L. Lindleyana.—Very distinct both in flower and growth; the foliage is like that of *Brassavola venosa*, and grows about eight inches long; sepals and petals rosy white; lip of the same colour, with the exception of the bottom part, which is dark rose. It blooms at different times of the year, and continues in perfection six weeks. Native of Brazil.

L. majalis.—This is a glorious plant from Mexico. It is a

dwarf-growing species, but the flowers are large, four inches across, of a delicate rose colour, the lip striped and spotted with chocolate. It blooms with the young growth, and lasts five or six weeks in beauty. This is one of the finest of the genus, and is rather difficult to flower in some collections, but I have flowered it successively for several years. I keep it rather dry and cool during the winter, with plenty of water during the growing season. It has been flowered very finely by Mr. Anderson, gardener to T. Dawson, Esq.

L. peduncularis.—A charming compact-habited evergreen plant from Mexico, growing like *L. acuminata*. The sepals and petals are of a beautiful dark rose; the lip is of the same colour, with darker spots in the centre. It requires to be grown on a block; blooms during the winter months, and lasts about a fortnight in perfection. The finest form of this plant I ever saw was in the collection of R. F. Ainsworth, M.D., under the care of Mr. Mitchell; the flowers in this case were deep rose-coloured, and three inches and a half in diameter.

L. Perrinii.—A truly beautiful species from Brazil, resembling a *Cattleya* in growth and flower; the sepals and petals light purple, with a crimson lip. It blooms in October and November, and continues in good condition a couple of weeks. There are two varieties of this plant; one producing much darker-coloured flowers, and being stronger in growth than the other.

L. Pilcheri.—This is a fine hybrid, obtained by Mr. Dominy. It is a cross between *L. Perrinii* and *Cattleya crispa*, and has light rose-coloured sepals and petals, the lip being narrow and pointed, purple with a white throat.

L. præstans.—A splendid dwarf evergreen species from Brazil. It grows six inches high, and often blossoms twice a year. The sepals and petals are dark rose, the lip rich

purple. The plant grows best on a block with a good supply of water at the roots in the growing season. There are several varieties, some of which are much better than others. This plant resembles *Cattleya marginata* in growth and in the size of its flowers. The finest plant I ever saw is in the rich collection of J. Sichel, Esq., Timperley, Cheshire, under the charge of Mr. Stevenson; this frequently bears between twenty and thirty flowers.

L. purpurata.—A magnificent Orchid from Brazil; grows two feet high or more, and has light green foliage. The blossoms are so large and showy as to render this, without exception, one of the finest Orchids in cultivation. There are many varieties of it, all of which are well worth growing, though some are much finer than others. The sepals and petals are pure white, the lip rich dark crimson purple; but in some of the varieties they are of a light rose colour. It blooms during May, June, and July, and lasts three weeks in perfection, if the flowers are kept dry. Of this a fine specimen in bloom was exhibited at one of the Royal Horticultural Society's meetings by R. Warner, Esq., Broomfield; the plant was large, and had about sixty flowers on it.

L. purpurata Nelisii.—In habit of growth this variety differs in no respect from the species. The flowers are large; sepals and petals white tinged with rose on the inside, whilst the sepals only on the outside are of rich rose colour; lip large and reddish crimson; a rare and very beautiful form. Native of Brazil.

L. purpurata, var. Williamsii.—A splendid kind from Brazil, and certainly one of the finest of the genus for exhibition purposes. The flowers are large, three or four on a spike, each bloom measuring more than five inches across; sepals and petals beautiful delicate rose; lip rich crimson, and very large. Blooms in May and June, and continues

three weeks in perfection; grows two feet high; foliage rich dark green.

L. Russelliana.—A very distinct and elegant variety, belonging to the *L. purpurata* section of this genus; the flowers are large, the sepals somewhat narrow, white suffused with lilac, the petals broader and slightly deeper in colour, the lip large and rosy-lilac, having a band of pale rose near the throat, which latter is light yellow pencilled with rose. Very rare. Native of Brazil.

L. Schilleriana.—A very fine species in the way of *L. elegans*, as regards growth as well as flower. It grows eighteen inches high, and has light green foliage nine inches long. The sepals and petals are white, the lip long and of a rich crimson; blooms during May and June, lasting three and four weeks in beauty. It makes a good exhibition plant on account of its showy flowers.

L. Schilleriana splendens.—A splendid variety which grows eighteen inches high, with two leaves of a light green colour on the top of the bulb. The plants flower twice a year; the blossoms are large, the sepals and petals light rose, veined with a deeper colour, the lip large, and of a beautiful magenta, the top part light rose, and throat yellow. It blooms in June and autumn, and as it lasts several weeks in perfection, it will make a fine exhibition plant.

L. superbiens.—A magnificent Orchid from Guatemala. It is rather a large-growing plant, but it is one of the finest of the genus. The flowers are produced on a spike five feet long, having sometimes on one spike from fourteen to twenty flowers, each measuring nearly four inches across. The flowers are of a beautiful deep rose, variegated with dark red; the lip is a rich crimson, striped with yellow. It blooms during the winter months, and continues long in beauty. The finest plant I ever saw of this was in the

Horticultural Gardens, Chiswick, and it is now in my own collection. This plant, when in bloom, is worth travelling miles to see. It sometimes produces as many as nine spikes of its beautiful flowers at one time; the plant is seven feet in length and four feet across, and is in perfect health.

L. Turneri.—This is another magnificent plant of the *L. elegans* section, from which, however, it seems quite distinct in its larger flowers, richer colours, and especially in the different form of the lobes of the lip. The flowers measure upwards of six inches across; the sepals and petals are of a deep rose pink, slightly veined with a darker hue; the lip is bright deep magenta in front, its upper parts white, slightly tinged with rose. It is a native of Brazil, and is without exception one of the finest plants known amongst Orchids. It was named in honour of the late J. A. Turner, Esq., of Manchester, and is figured in Warner's "*Select Orchidaceous Plants.*"

L. Wolstenholmæ.—A magnificent variety of *L. elegans*, producing large light amethyst flowers, the sepals being dotted at the edges with purple, and the petals margined with the same colour; lip deep purple. It is very distinct in appearance, and was bloomed by J. Day, Esq., and named after Mrs. Wolstenholm, his sister, who is an enthusiastic lover of these beautiful plants.

L. xanthina.—Not a very showy kind, but worth growing on account of its colour, which is pale yellow; flowers during May and June, and lasts in beauty three weeks.

Læliopsis.

L. domingensis.—A pretty species, and the only one of the genus I have seen. It is evergreen, and compact in growth, with short bulbs; leaves about three inches long; the flower spike proceeds from the top of the bulb, and

attains a height of twelve inches; blossoms rose coloured, and produced at different times of the year, continuing in beauty for five weeks at a time. A very scarce plant, and best grown on a block suspended from the roof, with a good supply of water at the roots during the growing season; in growth this plant is much like *Broughtonia sanguinea*.

Leptotes.

This small genus of Orchids deserves to be in every collection; it consists of small and compact-growing plants, with curious evergreen terete foliage channelled on the upper side, about three inches long, and producing their flowers from the top of the bulb. They are of easy culture, and will do either on blocks, or in pots with peat. These plants are very accommodating, for they will grow in either house, requiring a liberal supply of water in the growing season. They are propagated by dividing the plants.

L. bicolor.—A pretty Orchid from Brazil; sepals and petals white, with a blotch of purple on the lip; it blooms during the winter months, lasting four weeks in beauty.

L. serrulata.—A charming little plant, from the same country as *L. bicolor;* the flowers are nearly the same in colour, the only difference being, that they are much larger. It blooms in April and May, and lasts three weeks in perfection.

Limatodes.

L. rosea.—A charming winter-flowering Orchid, and the only species of the genus that I have seen; there are, however, many varieties of it. I have had five in flower at the same time, all differing more or less from each other in their colour, which varied from white to dark rose and pink, with different shades of rose. Few plants are more interesting or decorative during the dull season, and they may be had

in flower for months together. It is a deciduous plant, with short thick pseudobulbs and flag-shaped leaves. The flower spike proceeds from the base of the bulb, and attains a height of ten inches, bearing many flowers, which are usually of a pleasing shade of rose. During the growing season these plants require a liberal supply of water at the roots—in fact, they should be kept well watered till they are in flower; after they have done blooming, give them rest by withholding water. They do well in the East Indian house, in pots with peat, leaf mould, and sand, and potted in the same manner as *Calanthe vestita*, which they resemble in growth; they also flower about the same time as that equally useful Orchid. They are propagated by dividing the bulbs just when they begin to grow.

Lissochilus.

L. Horsfallii.—This is a genus much neglected and despised by Orchid growers, but we have not had the best species introduced to our gardens yet, or if they have been, they have soon disappeared again. The present one is a magnificent plant; in habit of growth it resembles our old acquaintance *Phajus grandifolius;* its flower spike stands up well above the leaves, producing a mass of large and beautiful flowers. Sepals of a rich brown; petals large, white, with a delicate shade of rose; lip green and rich purple. It was received by the gentleman whose name it bears from Old Calabar, and consequently will take strong heat. It is a terrestrial plant, and requires fibrous loam and good drainage, with a liberal supply of water during the time it is making its growth.

Lycaste.

Of this genus several fine varieties have appeared during the past few years; these chiefly belong to *L. Skinneri*, and

differ very much from each other in colour. I have seen several varieties in the collection of R. Warner, Esq., and also in those of J. Day, Esq., of Tottenham, and T. Dawson, Esq., of Meadow Bank, as well as in various other places. All the sorts of *Lycaste* have short thick pseudobulbs and flag-shaped leaves. The flowers are produced from the side of the bulbs, on spikes about six inches in length. The various plants belonging to this genus are of easy culture, if properly attended to with respect to water, of which they require a liberal supply during the growing season, especially *L. Skinneri* and its varieties. I have seen specimens of this species bearing as many as fifty blossoms, and producing a grand effect. They should be grown in a cool-house, potted in peat, with good drainage, and be liberally supplied with water during the growing season; they should, in fact, never be allowed to get dry at the roots even while at rest. These plants will stand for a very long time in flower in a sitting-room, and will continue in full perfection, without the slightest injury arising therefrom. They are propagated by division after flowering.

L. citrina.—A fine robust-growing plant, with the habit of *L. Harrisonæ*, and flowering about the same time. The flowers are large, thick, and fleshy; sepals and petals lemon colour; lip white and lilac. It is a distinct and rare plant. Native of Brazil.

L. cruenta.—A Guatemalan species, with yellow blossoms, marked with a dark spot in the centre of the lip; it flowers in abundance in March and April, and lasts three weeks in perfection.

L. Deppei.—A good old species from Xalapa. Flowers white and brown, with orange spots; lip deep orange. It blooms during the winter and spring months, and lasts long in beauty.

L. gigantea.—A stately-growing plant, of which there are several varieties, some of them not worth growing, though the best variety is well deserving a place with *L. Skinneri.* It makes oblong pseudobulbs some five or six inches high, bearing two, or sometimes three, large leaves from one to two feet long, and in June and July produces its large flowers, which are in the sepals and petals of a yellowish green, the lip being of a rich dark velvety purple, with a narrow margin of orange. Native of Santa Martha.

L. Harrisonæ.—An old and undeservedly neglected species. The pseudobulbs are stout and light green, bearing a single large, plaited, dark green leaf. The flowers are very large, measuring some three inches in diameter; sepals and petals large and fleshy, waxy-white; lip deep purplish lilac. It succeeds in a cool-house. Its flowers last an immense time in perfection in a sitting-room. Native of Brazil.

L. lanipes.—A very free-flowering kind from South America. It is in habit of growth similar to *L. Skinneri.* The flowers are large, produced in great quantities, greenish white; lip beautifully fringed. It is a most profuse bloomer during autumn, many dozen of flowers being produced, and these are very useful for cutting, and last a long time in perfection.

L. Schilleriana.—A free-growing plant, with somewhat the habit of *L. gigantea.* The flower spike attains the height of six inches; sepals about four inches long, yellowish brown; petals smaller, and white; lip white in front, and yellow at the base. This was first shown by Lord Londesborough.

L. Skinneri.—A beautiful free-flowering Orchid from Guatemala. The sepals and petals are pure white, tinged at the base with rose; the lip of the same colour, spotted with crimson; blooms during the winter months, lasting a long time in beauty. This plant ought to be in every collection; it is one of the finest for winter blooming, its large, numerous,

singularly-formed, and richly-coloured flowers rendering it at that season peculiarly attractive.

L. Skinneri delicatissima.—Another distinct and handsome variety from Guatemala. Flowers large, measuring six inches across; sepals and petals pinkish white; lip white, intermixed with rose. Blooms in February, and continues in perfection six weeks.

L. Skinneri gloriosa.—A fine variety of this beautiful winter-blooming Orchid. The sepals are very large and broad, pale pink in colour, whilst the petals are rich rosy pink, somewhat lighter inside; the lip is white towards the front. Native of Guatemala.

L. Skinneri rosea.—A magnificent variety, also from Guatemala. Flowers large, being quite seven inches in diameter; sepals and petals rich dark rose; lip white spotted with crimson. This is the finest I have seen, and it lasts six weeks in beauty.

L. Skinneri superba.—Another splendid variety, likewise from Guatemala; sepals and petals blush white; lip of the richest crimson. A very showy kind. I have seen this very fine in several collections, especially with Mr. Penny, gardener to H. H. Gibbs, Esq., Regent's Park, London.

L. Skinneri virginalis.—A distinct and pretty variety from Guatemala. Sepals and petals pure waxy-white; lip white; flowers smaller than those of *Skinneri*, with which it blooms contemporaneously, and it lasts a long time in perfection. A scarce variety.

MASDEVALLIA.

This is a very interesting genus, comprising many very beautiful neat-growing plants, which should be in every collection, for they occupy but little space, and are both free blooming and free growing, providing they get the treatment they

require. They have hitherto been grown in too much heat by the majority of Orchid cultivators, but I find them grow best in the cool-house, with *Odontoglossums*, and under the same treatment. They should be potted in peat and sphagnum moss, with good drainage, and always kept moist at the roots, though never allowed to get soddened by bad soil and deficient drainage, which is too often the case with these rare little plants. Mr. Pilcher, gardener to S. Rucker, Esq., grows these plants to great perfection, and blooms them beautifully every year in a cool-house.

M. coccinea.—This little gem has often been sent to this country, but either they have been dead on arrival, or have soon died through being subjected to great heat, and other bad treatment. We have, however, now learnt a good method of growing them. Dr. Lindley says, in describing it:—"This is a most charming thing, with flowers as red as a soldier's coat. Native of Pamplona, in New Grenada."

M. maculata.—A charming and very remarkable plant. It is similar in habit to the other species, producing yellowish flowers, with rose and purple spots; the sepals and petals are very much lengthened out, and measure four inches from tip to tip. Well deserving a place wherever there are any cool Orchids grown, but it cannot live in heat. Native of Columbia.

M. tovarensis.—This is a very distinct species, and easy of culture. It lasts a long time in bloom, and thus makes up, with its modest beauty, for any deficiency that may be felt when compared with larger and more attractive flowers. The present plant is a native of Columbia, being found at an altitude of several thousand feet: it produces its pure white flowers in pairs, which, as before remarked, remain a long time in perfection.

M. Veitchiana.—The most beautiful species of this genus

yet introduced. The stem-like pseudobulbs are some six or eight inches long, furnished with a single dark shining green leaf, from the base of which the scape is produced, bearing a solitary flower about six inches across; sepals ovate, lengthened out into tails at the points; the ground colour is a rich bright orange scarlet, beautifully shaded with purple and bright yellow; the petals and lip are small, and almost hidden. It is a native of the high mountains of Peru, and requires very cool treatment.

MAXILLARIA.

This is a large genus of Orchids, but many of the species, on account of their small flowers, are not worthy of cultivation. The kinds here enumerated are, however, very good. They are evergreen plants, and can be grown in the cool-house with *Odontoglossums*, and succeed best grown in pots, with a mixture of peat and moss and a liberal supply of water during their growing season, which should be reduced during the period of rest to just sufficient to keep them in a plump state.

M. grandiflora.—This fine plant enjoys a very cool atmosphere; indeed, to succeed with it, the coolest end of the *Odontoglossum* house should be selected for its reception, and the atmosphere kept very moist. The pseudobulbs are ovate, have sharp edges, and are deep green; leaves also dark green, and about a foot long; flowers produced singly upon a scape about six inches in length; sepals and petals pure white; lip pouched, dark purple at the sides, the triangular middle lobe yellow in front, white towards the base. A very desirable plant, blooming during autumn. Native of Peru, &c.

M. luteo alba.—This is a very neat-growing plant, with bulbs something like those of *M. venusta*. The leaves are long and broad, and grow to the height of eighteen inches;

the flowers proceed from the side of the bulbs at different times of the year, and are large, of a creamy white colour.

M. nigrescens.—There are several varieties of this species; the best are handsome, and well deserving the attention of Orchid growers. Pseudobulbs light green, bearing a solitary dark green coriaceous leaf. The flowers are produced singly, and upon erect peduncles. Sepals and petals spreading, port-wine colour; lip same colour, but in addition, it is stained with dull purple. It blooms at various times of the year, and should be grown in the cool-house. Native of New Grenada.

M. splendens.—A very handsome plant, deserving a place in every collection; in growth it is something like *M. venusta*, but more robust; sepals and petals white; lip orange, margined with rose. Native of Peru.

M. Turneri.—A very distinct and handsome species. The pseudobulbs are short, with long broad leaves a foot high, of a very dark green; the flowers are of a rich cinnamon brown and crimson, with a delicious fragrance. Blooms in May in great profusion, and continues a long time in perfection.

M. venusta.—This is a charming plant; one of the best of the genus, of easy culture, blooming at different times of the year, and continuing long in perfection. It has large showy white flowers, the lip yellowish, with light red markings, and the foliage is of a light green, about a foot high. There are two varieties of this, one having the flowers larger and more pure in colour than the other.

MESOSPINIDIUM.

M. sanguineum.—This very pretty plant is a native of the Peruvian Andes, and though known for many years, was never brought in a living state to this country until recently. In habit it resembles the *Odontoglossums*. The flower spikes are pendulous and branched; the flowers are

of a beautiful waxy appearance, bright rose in colour, and produced in autumn. This will do either in a pot or on a block, with moss; if grown in a pot, peat and moss is the best material for potting; it will do well in the cool-house.

MILTONIA.

This genus includes some beautiful species, all of which are evergreen, compact in growth, and have light green foliage, with short bulbs, bearing two or three leaves on each; they flower freely from the side of the bulbs. Some of them require different treatment from the others, which will be mentioned when describing the different species. They will succeed in the *Cattleya* house. The most of them require to be grown in pots, in peat and moss, with good drainage; and they like a liberal supply of water during the growing season, and to occupy the shadiest part of the house. Propagation is effected by dividing the pseudobulbs when they begin to grow.

M. anceps.—A singular and rare species, which, after being in cultivation some time, was lost, and we are indebted to the Messrs. Low for its reintroduction. Its flowers are about two inches in diameter, produced singly; sepals and petals dark olive colour; lip streaked and dotted with reddish purple, on a white ground. It requires precisely the same treatment as that indicated above.

M. bicolor.—A beautiful species from Brazil, which grows about eight inches high, with the habit of *M. spectabilis*, but it is stronger, and the flowers are larger; sepals and petals white; lip also white, with a blotch of violet in the upper part. In bloom in August, and will last in perfection six weeks. Of this there are two varieties, one called *M. bicolor superba*, with larger flowers and more white on the lip.

M. candida.—A fine strong-growing species; sepals and petals yellow and brown; labellum pure white, marked with

pink. It produces its spikes of flowers during the autumn, lasting three weeks in bloom. Native of Brazil.

M. candida grandiflora.—This is much finer than *M. candida*, the plant being much stronger in its growth, and the flowers larger and brighter in colour. It is best grown in a pot with peat and moss; a very rare plant.

M. Clowesii major.—This plant produces long spikes of flowers in September and October; sepals and petals pale yellow, barred with chocolate; lip purple and white; it lasts long in perfection. Of this there are several forms, but this variety is the best; it should be grown in a pot with peat and moss. Native of Brazil.

M. cuneata.—A pretty species, which grows some ten inches high, resembling *M. candida* in growth; the blossoms are produced several together on upright spikes; sepals and petals dark brown, tipped with pale yellow; lip white. Flowers in February, and continues four or five weeks in perfection. It is best grown in a pot, in peat, with good drainage. From Brazil.

M. festiva.—This is a remarkable and handsome addition to this genus; the plant resembles *M. spectabilis* in growth and general appearance, but the flowers are very distinct, and are borne in pairs; sepals and petals narrow, ochre-coloured; lip large, pointed in front, purplish lilac, with radiating streaks of deep purple. At present this species is somewhat rare. Native of Brazil.

M. Moreliana.—A handsome and most desirable plant. The flowers of this species resemble those of *M. spectabilis* in shape; the colour of the sepals and petals is, however, very distinct, being deep rich purple; lip broad, beautifully veined with rose. It grows in the same way as *M. spectabilis*, and produces its flowers in September and October, continuing in bloom a long time. Native of Rio Janeiro.

M. Moreliana atrorubens.—A magnificent variety of the preceding from Brazil; flowers very large, often measuring four inches across, with the colour much darker than that of *M. Moreliana.* It blooms in September, and lasts a considerable time in beauty. A scarce plant.

M. Regnelli.—A charming Brazilian species, which grows in the way of *M. cuneata.* The leaves are light green, and about twelve inches long; spikes erect, producing from three to six flowers; sepals and petals white; lip light rose. A very distinct kind, which generally blossoms in September or October, and lasts in bloom four or five weeks. It is best grown in a pot, with peat and moss. Also a rare Orchid.

M. Regnelli purpurea.—This is a very superior form of the preceding, and very rare; the habit of growth is the same, but the spike is longer, and the flowers are larger, and vastly superior in colour, which in the sepals and petals is delicate rose, margined with white, and in the large, flat lip of an intense crimson-purple, the crests being white. Native of Brazil.

M. spectabilis.—A beautiful Orchid from Brazil. It grows about six inches high, and produces its large solitary flowers in July and August, lasting six weeks in beauty if kept in a cool-house and free from damp; sepals and petals white; the lip large, sometimes measuring four inches across, violet, edged with dull white. Of this beautiful species there are some varieties much better than others. It is a most desirable old plant, and easily grown into a good specimen. Native of Brazil.

M. spectabilis rosea.—This very handsome plant, though rare, has been for some time in cultivation under this name, and also under that of *M. Warneri;* in habit of growth it resembles *M. spectabilis*, but the pseudobulbs are narrower

and longer, so also are the leaves. The flowers, which are large, are in the sepals and petals white, shaded with light rose, and the lip is a rich deep rose, margined and striped with white. It flowers during summer, and remains in perfection for several weeks. Native of Brazil.

M. Warscewiczii.—This beautiful plant is to be found in some gardens under the name of *Odontoglossum Weltoni;* it is a very distinct and handsome plant, with somewhat flat pseudobulbs, sharp at the edges, and nearly the same size throughout their entire length. The flower spike becomes branched with the age of the plant, bearing a profusion of blossoms; sepals and petals waved at the edges and blunt at the point, bright cinnamon tipped with yellow; the lip is large and broad, pale violet, the centre yellowish white, and the front part also white. It should be grown with the *Odontoglossums* from cool countries. Native of Peru.

Mormodes.

A large and most interesting genus, of which only a few find favour with Orchid cultivators. They are deciduous, and will do best in the *Cattleya* house, potted in peat, with a liberal quantity of water at the roots during their period of growth; afterwards water should be gradually withheld until they become quite dry, when they may be placed near the glass till they begin to grow. They are propagated by dividing the plant.

M. citrinum.—A Mexican plant, and the best of the genus; flowers yellow, and produced on a short spike in July and August.

M. luxatum.—This is a very handsome species, having creamy white sepals and petals; lip the same colour, with stripes of brown in the centre. Blooms in July, lasting in bloom two weeks or more. Native of Mexico.

M. pardinum.—Another very beautiful species, also from Mexico, unfortunately seldom seen in collections; the sepals and petals are bright yellow, spotted with rich brown. Native of Mexico.

NANODES.

N. Medusæ.—This is a very rare, most extraordinary, and beautiful plant, very distinct in habit from any other Orchid I have seen. There is no bulb to support it, only a woody stem with light green leaves on both sides, which are about three inches long; flowers large terminal, produced two or more together; sepals and petals light green, tinged with brown; lip large and spreading, deeply fringed round the margin, rich maroon in colour, except towards the base, where it is green. It is a plant well worth growing, and will require to be grown on a block, and kept very cool, as it is a native of the higher Andes of Western S. America.

ODONTOGLOSSUM.

To this magnificent genus of Orchids so many fine additions have of late years been made, that it now contains some of the showiest species in cultivation. It is a large genus, many of the species producing flowers of inferior merit; but those here described are worthy of a place in every collection. All of them are evergreen; some have stout, thick pseudobulbs, very compact in growth, while others have small bulbs, with small narrow leaves. All produce their flower spikes from the base of the pseudobulbs, and require an intermediate or cool-house to grow them luxuriantly. With the exception of *O. citrosmum* and *O. Phalænopsis*, which thrive best with the *Cattleyas*, I find them succeed best in a cool-house, the temperature of which ranges from 45° to 55°. Some are best grown on blocks, while others do best in pots, in peat and moss mixed together, with good drainage, a liberal supply of water at the

roots being required during the growing season—in fact, they never should be allowed to get dry at the roots. It is a good plan to have some live sphagnum moss growing on the top of the soil, as it keeps a nice wholesome moisture about them, which they seem to delight in. The demand for these plants has become very great of late, and I do not wonder at it, for they are a lovely class, and can be grown in a cool-house at a less expense than the East Indian Orchids, besides being productive of more enjoyment to lady cultivators. Many of them are truly beautiful, and continue a long time in perfection. It is much to be regretted they are so difficult to import: many hundreds of plants die before reaching this country. I have opened many boxes of these valuable plants, in which all have been dead, and many also which have arrived in excellent condition. We are indebted to the Messrs. Low, O'Reilly, and others, for introducing many of our finest species; and I live in hopes of seeing many more of them added to our stores. These plants are propagated by dividing the bulbs just as they begin to grow. Care must be taken to keep them from the burning sun, as the foliage of some of the kinds is very tender. Tobacco smoke is also very detrimental to many of the *Odontoglossums*, by spoiling their leaves. The best way to keep them free from insects —a thing which is very important—is to wash carefully with clear water.

O. Alexandræ.—A charming addition to our collections, which varies very much in its markings; but I believe the form which originally received this name was pure white, with bright golden spots on the lip. It is a graceful plant, producing its lovely spikes of bloom freely when kept quite cool. There are many varieties of this beautiful plant, some much finer and larger than others; but I have not seen a single bad one. The finest that has come under my notice flowered with

Mr. Pilcher, gardener to S. Rucker, Esq., Wandsworth, each flower measuring upwards of three and a half inches in diameter. It grows at an altitude of 7,000 to 8,000 feet in Bogota.

O. Alexandræ guttatum.—This is a distinct and handsome variety; the flowers are large, pure white, sepals and petals bearing a few spots of reddish-brown; lip large, deep yellow at the base, and there dotted with red, with a single large spot in the centre of the lip. Native of New Grenada.

O. Alexandræ giganteum.—Pseudobulbs and leaves large, and robust; flower spike three feet high, branching, and many-flowered; flowers large, white, spotted all over most profusely with reddish brown. I saw a plant of this variety last October in the collection of T. Dawson, Esq., Glasgow; it had three spikes of bloom, each upwards of three feet high, much branched, and bearing over fifty superb flowers.

O. Alexandræ Trianæ.—A superb variety; flowers large, nearly three inches in diameter; sepals white, shaded with rose, the upper one having a single large round spot in the centre, while the lower ones have each three such spots, with several smaller ones; petals pure white, and much broader; lip with a large blotch of rose in the centre, barred and spotted with the same colour.

O. Alexandræ Warneri.—Another magnificent form of this beautiful species. It was named by Mr. Bateman when exhibited at the Royal Horticultural Society's Exhibition in 1869. The sepals are white, stained with rose, and spotted with purplish brown; the petals are very broad, dentate at the edges, and pure white; lip large, white, stained at the base with rich yellow.

O. Andersoni.—This is a singular and very interesting plant. The pseudobulbs and leaves resemble those of *O. Alexandræ*, but the flowers suggest the idea of its being a natural hybrid

between that species and *O. gloriosum;* sepals and petals in shape like those of the last-named plant, white spotted with purple; lip resembling *O. Alexandræ.* I have only seen this plant in the rich collection of Thos. Dawson, Esq., Meadow Bank, and it is named in compliment to Mr. Anderson, his gardener.

O. astranthum.—This is a pretty species with a large branching spike, bearing upwards of fifty flowers, which are nearly two inches in diameter; sepals and petals yellowish, blotched with purplish-brown; lip white, spotted with pale rose. It requires quite cool treatment. Native of Ecuador.

O. bictoniense superbum.—A distinct free-growing plant, much superior to the old form; pseudobulbs and leaves light green; spike erect, many flowered; sepals and petals dark chocolate brown; lip large, purplish mauve, marked with darker lines. It blooms during the autumn months, and is a very desirable plant. Native of Guatemala.

O. blandum.—This is a very fine species, being somewhat in the way of *O. nævium.* The sepals and petals are equal in size, narrow and pointed, yellowish white, beautifully spotted and freckled with maroon crimson; the lip of the same colour, but much broader than in *O. nævium.* Native of New Grenada.

O. Bluntii.—This is very nearly allied to *O. Alexandræ;* indeed, most Orchid growers consider it a variety only of that species, whilst several high authorities maintain it is specifically distinct. The sepals and petals are white, shaded with rose, and richly spotted with crimson; lip white, and also profusely spotted. There are many varieties of this, as well as *O. Alexandræ.* I saw a very fine example of this plant with Messrs. Brooke & Co., of Manchester; it had a long branching spike, bearing twenty-eight flowers. Native of New Grenada.

O. cariniferum.—A very free-growing plant, producing large

branching spikes of bloom, which are, in the sepals and petals, reddish brown, greenish outside; the lip yellowish white. It succeeds well in the cool-house, continuing in bloom for three months. This species has flowered very freely in the collection of the Bishop of Winchester, under the care of Mr. Laurence. Native of Central America.

O. citrosmum.—A charming Orchid from Guatemala. It produces its long pendulous spikes of flowers in June and July; the ground colour is white, the flowers measuring two inches across, twelve or more on one spike. It will continue in perfection four or five weeks if kept in a cool-house free from damp, and makes one of the finest plants for exhibition.

O. citrosmum roseum.—A fine variety of the preceding, from Guatemala; it grows in the same way, and produces its rosy flowers on long drooping spikes. The late J. A. Turner, Esq., exhibited this variety, with many spikes, on one occasion in fine condition at the Manchester Botanic Garden.

O. constrictum —Although not a large flowered species, this plant is very pretty, producing a quantity of flowers upon a large branching spike. The pseudobulbs are somewhat ovate, ribbed and dark green, supporting a pair of oblong leaves of the same colour; spike branching and many-flowered; sepals and petals yellow, spotted and barred with reddish brown; lip white, tipped with yellow, and bearing two conspicuous rose-coloured spots near the centre. Native of Caraccas.

O. cordatum.—A desirable species from Guatemala. It grows ten inches high, and has short thick pseudobulbs, from the side of which the spikes proceed; sepals and petals yellow, barred with crimson; lip white, spotted round the edge with crimson. This plant requires to be grown in a pot in peat. I saw a wonderful specimen of it in the collection of T. Dawson, Esq., measuring eighteen inches across, and which produces many

spikes every year: it has been grown from a small piece, which shows that it gets the proper treatment. This plant is still very rare, those which have been imported and sold for it having often turned out to be *O. maculatum.*

O. cordatum superbum.—This very fine variety was exhibited at the great summer show at Manchester in 1867, by A. Turner, Esq., of Leicester, who possesses, in his superb collection, many perfectly unique varieties, and this is certainly not the least. The flower spikes were upwards of two feet high, very much branched; colours richer and flowers larger than in the preceding.

O. coronarium.—A charming species from South America; it grows eighteen inches high, with short thick pseudobulbs, and dark green foliage; the spike, which rises upright from the side of the bulb, is about eighteen inches in height; sepals and petals reddish brown, edged with yellow; lip bright yellow. It does best in a pot in peat, and will continue a long time in perfection.

O. cristatum.—A pretty compact-growing and free-flowering species from Peru. The pseudobulbs are conical, of a light shining green, with narrow leaves, producing flowers of a rich yellow, spotted with purple. There are several varieties of this, some of which are very deficient in colour.

O. Galeottianum.—This is a plant nearly allied to *O. nebulosum*, and still somewhat rare; in growth it resembles *O. Cervantesii*, and it may be a hybrid between these two species. The flowers are white, with the exception of the petals, which are transversely barred with brown at the base; lip white, with a few streaks of yellow near the base. Native of Mexico.

O. gloriosum.—This, like many more of the family, would appear to seed freely in its native country and produce numberless varieties, some of which are good. It is a plant

ODONTOGLOSSUM HALLII,

New Grenada.

of good constitution, and easily grown. It produces a long branched spike. The flowers vary much in size and colour, but they are mostly yellow, clouded with green, and spotted with a lively brown. It is a native of New Grenada.

O. grande.—A remarkably handsome species from Guatemala; produces its very large flowers on an upright spike during the autumn. The flowers are mottled and striped with brown and yellow, like the back of a tiger; the lip white and purple. It remains in perfection three or four weeks, if the flowers are kept dry. This plant, which is one of the finest of the genus, should be grown in a pot.

O. grande magnificum.—In habit of growth this resembles the preceding, but it bears sixteen flowers upon a spike, and these have the most splendid and brilliant markings, and measure seven inches in diameter; lip also large in proportion. This plant I saw in the collection of T. Dawson, Esq., and it well deserves the name of *magnificum*. With it there were in bloom fifty to a hundred plants of *O. grande*, forming a really beautiful display.

O. Hallii.—A charming kind, belonging to the *O. luteo-purpureum* section, but it has a superior and more beautiful flower than any variety of that species I ever saw. The pseudo-bulbs are about three inches high; leaves upwards of a foot long, and two inches broad, light green; spike produced from the base of the bulbs, many-flowered; flowers measuring about four inches across; sepals and petals buff, spotted and barred with reddish brown; lip large, white, blotched with purplish brown, bordered with white, and beautifully fringed; throat rich yellow, streaked with orange and white. I saw this magnificent variety in bloom with Mr. Penny, gardener to H. H. Gibbs, Esq., Regent's Park, under whose care the *Odonto-glossums* thrive admirably.

O. hastilabium.—A desirable Orchid from South America.

It produces its spikes of flowers in June, July, and August, the colour being purple, green, and white. It continues blooming for two months, if kept in a cool-house. This is a useful plant for exhibition, on account of its continuing in bloom so long.

O. Insleayi.—This grows in the same way as *O. grande;* the flowers are brown, yellow, and orange, and are produced on a short spike at different times of the year, lasting in beauty three weeks. Native of Mexico.

O. Insleayi splendens.—In this variety the sepals and petals are rich shining brown tipped with yellow; the lip is large, yellow and spotted with purple. A very fine form introduced from Mexico.

O. Krameri.—This is a rather pretty species, and seems to be related to *O. citrosmum*, though having a very different appearance. The pseudobulbs are somewhat flat, with sharp edges, in some specimens almost spherical, in others ovate, and pale green in colour, bearing, as far as I am aware, a single leaf only. The spikes are freely produced from the base of the bulbs, and are pendulous, bearing several flowers a little less than those of *O. citrosmum;* the sepals and petals are strap-shaped and obtuse; the lip somewhat reniform, and deeply notched in front. The whole flower is of a charming violet colour, the lip, in addition, being marked and spotted with yellow and purple, with two lines of rich dark brown near the column. It is a good addition to this numerous family, and should be grown in peat and sphagnum moss, and will, like *O. citrosmum*, require a little more warmth than the generality of the genus. Native of Costa Rica.

O. læve.—A pretty species, which will take the very coolest treatment. It is very nearly allied to *O. Reichenheimii*, and may probably prove to be a variety of that species. Being a very abundant bloomer, it will no doubt become generally cultivated.

O. luteo-purpureum.—The numerous varieties of this plant have given rise to many names, but I think most growers of Orchids are now satisfied they are only varieties; still, as such, they are well worthy of a place in every collection. The leaves are about a foot long; flower spikes about ten to eighteen inches; sepals and petals of a bright brown, the margins yellow; lip white, with the base brown, and banded with white, the bristles or beard of the lip being deep yellow. It is a native of New Grenada, being found at an altitude of 7,000 to 8,000 feet.

O. maculatum.—A pretty species from Guatemala. It grows a foot high, with short thick pseudobulbs, and produces its sub-erect spikes of blossoms during winter; colour yellow, crimson, and dark rose; it will last in bloom a long time, and succeeds best in a cool-house, in a pot, in peat and moss.

O. maculatum integrale.—A very interesting variety of the preceding which I had the good fortune to introduce. It has been named by Professor Reichenbach, who, it appears, knew it already in a dried state. Growth the same as *maculatum*. Sepals light brown; petals white, with a few transverse bars of brown at the base; lip white, with a yellow crest. Native of Guatemala.

O. membranaceum.—A beautiful small-growing species, from Guatemala; sepals and petals pure white; the lip of the same colour, barred with brown. It blooms during the winter months, and continues in bloom four weeks. This will do on a block of wood or in a pot. There are many varieties of this species.

O. membranaceum roseum.—A handsome variety, producing its flowers through autumn and winter; they are rose colour, shaded with yellow, barred with brown, and produced five or six on a spike. Native of Guatemala.

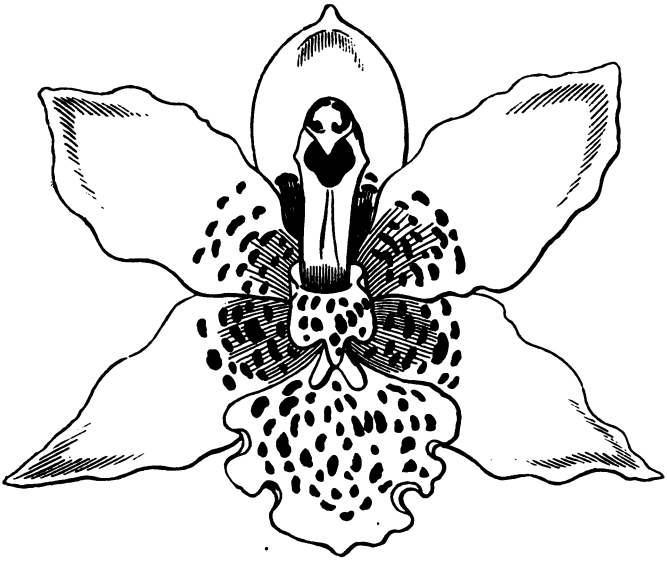
O. nævium.—A pretty dwarf Orchid from Truxillo. The

colour of the flowers white, spotted with crimson, the lip yellow. It blooms in June and July, and lasts a considerable time in perfection. A scarce plant. There have been of late a good many plants imported and sold for this species, but we have not heard of one turning out true. The pseudobulbs resemble those of some other species, which makes it difficult to determine it in a newly imported state.

O. nævium majus.—A beautiful variety of the preceding; it grows ten inches high, and produces upright spikes of flowers, which are pure white, speckled all over with rich crimson. Mr. Stone, gardener to J. Day, Esq., of Tottenham, has flowered some fine plants of this splendid Odontoglot. Mr. Brockhurst, also, when gardener to A. Turner, Esq., of Leicester, flowered a superb variety, which is very rare. The plant requires great care to grow it well; a cool-house suits it best, with a good supply of water—in short, it should never be allowed to become dry. This and the preceding last several weeks in bloom, and they both make fine exhibition plants. Native of Mexico.

O. nebulosum.—A very handsome species from Mexico. The flower spike comes up with the young growth, bearing five or six large flowers, and becomes pendulous as they expand; the sepals and petals are clear white, thickly studded with spots of reddish brown; lip different only in the spots being larger, with a faint tinge of yellow. A rare plant. There have of late been many plants imported for this, but I have not seen the true one amongst them.

O. nebulosum candidulum.—A very pretty delicate variety of the previous plant, precisely like it, saving in having the sepals and petals pure white, and entirely destitute of the spotting or clouding of reddish brown. It flowered in the collection of J. Day, Esq., Tottenham. This we do not consider so good as the original form of the species.



ODONTOGLOSSUM NEBULOSUM,
Mexico.

ODONTOGLOSSUM WARNERIANUM,
Mexico.

O. odoratum.—This species produces a branching panicle of flowers, which are in the sepals and petals golden yellow blotched with brown, and crisp at the edges; lip of the same colour, white towards the base. It blooms during the winter months, and, as its name implies, is sweet scented. Native of New Grenada.

O. Pescatorei.—A magnificent species which grows ten inches high, with small pseudobulbs, and leaves a foot in length. It produces branching spikes of richly ornamental flowers during April and May; sepals and petals white, with a shade of rose in them; lip white, yellow, and rose. This is a difficult plant to manage, and requires great care. There is a wonderful specimen of this fine species in the collection of T. Dawson, Esq., Meadow Bank, Glasgow, which produces as many as a hundred flowers on a spike. I have seen another example in the fine collection of A. Turner, Esq., of Leicester, bearing upwards of a hundred splendid flowers; and when grown in this way it produces a charming effect. There are several varieties of it, all of them good. It does best in a cool-house, grown in a pot. Native of New Grenada.

O. Phalænopsis.—A most lovely compact-growing species, having short pseudobulbs, and narrow leaves about eight inches long. The flowers, which are generally two or more together on a spike, are flat and very distinct from those of all other kinds; sepals and petals white; lip crimson in the centre, edged with white; it will last in bloom four or five weeks. This is a free plant to cultivate, but it requires the heat of the *Cattleya* house in winter to grow it well; it also requires a well-drained pot, and good fibrous peat. Mr. Byers, when gardener to the Lord Chancellor of Ireland, bloomed this for many years, and exhibited several very fine specimens. Native of New Grenada.

O. pulchellum.—A pretty species from Guatemala; the

flowers are white, with the exception of the crest of the lip, which is spotted with crimson. It blooms during the winter months, and lasts five weeks in good condition.

O. pulchellum majus.—This is a very robust form of *pulchellum*, having the pseudobulbs much larger, and the flowers fully double the size of those of the ordinary variety, as well as produced in greater profusion upon the spikes; in addition it is very fragrant, and will perfume the house it is growing in.

O. Reichenheimii.—This is a strong, free-growing, and handsome species; it grows a foot or more high, sending up its branched spike some two or three feet in length; sepals and petals yellow, clouded with green, and barred with purplish brown; the lip varies in colour very much; in some varieties it is quite dark, in others light purple. This when well grown makes a fine specimen. Native of Mexico.

O. radiatum.—A very handsome plant, the flowers being large and freely produced; sepals and petals pale yellow, barred and blotched with rich chestnut brown; the lip is white, with a chestnut brown blotch at the base, and prettily fringed round the margin; column dotted with yellow. It blooms during the summer months, and is considered by some to be a form of *O. luteo-purpureum*. Native of New Grenada.

O. Rossii.—A desirable little Orchid from Mexico. It produces its white and purple flowers during the winter, and lasts long in beauty. Is best grown on a block, but should always be kept moist.

O. Rossii majus.—This is a superb variety of the preceding; the growth is somewhat more robust, and the flowers are vastly superior, often measuring three inches and upwards in diameter, and two or three being frequently borne upon each spike; sepals white; petals also white, but beautifully striped with transverse bars of purplish-crimson; lip large, cordate, and pure white, the column being in some varieties purple, in others

ODONTOGLOSSUM GLORIOSUM,
New Grenada.

ODONTOGLOSSUM RADIATUM,
New Grenada.

yellow. It blooms during mid-winter, lasting a very long time in full beauty. One of the finest and largest varieties of this plant I ever saw was flowered by Mr. Kemmery, gardener to E. G. Wrigley, Esq., of Bury, Lancashire. Native of Mexico.

O. roseum.—This very handsome plant I have only seen in a small state, but even then it was a charming plant; when, however, it has been longer in cultivation, I have no hesitation in saying it will be one of the most distinct and beautiful. Its flowers are about an inch across, rosy-carmine, with the lip not quite so bright. It produces from twelve to twenty flowers on each spike during the winter months, and it remains in full beauty for a considerable time. The cool-house suits it best. Native of Ecuador.

O. rubescens.—Another of the many cool Orchids for which we are indebted to the late Mr. Skinner. A dwarf-growing kind; flowering in autumn; the sepals and petals are blush, spotted with crimson; the lip is white and very pretty. It is a native of Nicaragua.

O. retusum.—This is not a magnificent large-flowered species, but is well worth a place in a collection on account of the profusion of flowers it produces during winter. It is a dwarf-growing plant, producing a branching spike which bears upwards of a hundred flowers; sepals and petals orange-red, tinged with yellow; lip yellow in some varieties, in others of the same colour as the sepals and petals. Native of Ecuador.

O. Schlieperianum.—This plant was confounded with *O. Insleayi* for a long time, and in growth it certainly resembles that plant very much; the flowers are, however, very distinct; sepals and petals soft light yellow, faintly blotched with a darker yellow; lip same colour, somewhat small. It flowers towards the end of summer, and not during the winter months.

O. triumphans.—A magnificent and rare species, which grows a foot high, with short thick pseudobulbs, and dark green

leaves; it produces branching spikes of blossom during the spring months; flowers three inches in diameter; sepals and petals golden-yellow, barred and spotted with rich crimson; lip caudate, white at the base, front portion rich deep rose. This species will last in perfection several weeks. This has bloomed very finely with Mr. Marshall, of Enfield.

O. Uro-Skinneri.—A pretty strong-growing species with thick shining bulbs; blossoms during autumn, and continues flowering for a long time; sepals and petals pale green, spotted with brown; lip blush white; requires to be potted in peat. Native of Guatemala.

O. Wallisii.—A plant belonging to the *O. Lindleyanum* section, but superior to that species; the spike is many-flowered; sepals and petals soft yellow, streaked with reddish brown; lip white, purplish-violet in front, and streaked with the same colour at the base. It blooms during winter. Native of New Grenada.

O. Warnerianum.—This very handsome species is supposed to be a native of Mexico. It flowered first in the fine collection of R. Warner, Esq., of Broomfield. The plant is dwarf in habit, and the scape, which is longer than the leaves, bears four or five flowers; sepals and petals pure white, with a few brown spots; lip white, shaded with rose, with a yellow blotch at the base. A very rare species; beautifully figured in the second series of Warner's "*Select Orchidaceous Plants.*"

ONCIDIUM.

This is a large genus of Orchids, of which many of the species are very beautiful. All of them are evergreen; their flowers are rich coloured and showy, and they make fine exhibition plants. Some of them are large growers, while others are more compact; and, in addition to their flowers, some species have handsomely spotted foliage. They have generally short thick

ONCIDIUM ROGERSII,

Brazil.

pseudobulbs, from which the leaves and flower spikes proceed; but in this respect there is much dissimilarity amongst them. Some kinds succeed well on blocks of wood, but they are generally best grown in pots, with peat and moss and good drainage. They require a liberal supply of heat and moisture in the growing season; afterwards only just enough water is required to keep their leaves and bulbs plump and firm. These plants are very accommodating: they will thrive in either house, and are propagated by division of the pseudobulbs. The following are all fine sorts, and ought to be in every collection, being of easy culture. There are, moreover, many other *Oncidiums* worth growing, besides those named in the following list.

O. acinaceum.—This is a very distinct and elegant species, producing spikes from one to two feet long; flowers about an inch across; sepals white; the large petals are violet, bordered with white; the lip is the same colour, shaded with carmine. It should be grown in the cool-house. Native of Peru.

O. ampliatum majus.—One of the finest species in cultivation. It produces its large yellow flowers in abundance, on a long branching spike three or four feet high, in April, May, and June, and continues blooming for two months. It is a robust-growing plant, and should be grown in a mixture of peat and sphagnum. When this plant is in good health and well flowered, it is one of the finest *Oncidiums* for exhibition purposes. Native of Guatemala.

O. Barkeri.—A remarkably handsome dwarf Orchid from Mexico; the flowers are very large; the sepals and petals rich brown, barred with yellow; the lip a bright yellow, about an inch and a half across. It produces its branching spikes of flower during the dull months of autumn and winter, which greatly enhances its value, and it lasts six

weeks in bloom. This very rare plant is also found in cultivation under the name of *O. tigrinum*. The finest specimen of this which has come under my notice, was in the collection of Dr. Ainsworth, of Lower Broughton, under the care of Mr. Mitchel. It had upwards of fifty flowers on a large branching spike.

O. Batemanii.—A good distinct kind from Brazil, growing about eighteen inches high, and having pale green foliage; rather a shy-flowering plant, but one which is worth growing on account of its beautiful bright yellow flowers, which are produced at different times of the year.

O. bifolium.—A handsome dwarf-growing species, with ovate dark green pseudobulbs, which are streaked with a few black marks; the leaves are short, borne in pairs, and like the bulbs, deep green; sepals and petals brown; lip bright yellow, and of large size. It produces short spikes of these flowers in May and June, which last a long time in perfection. There are two varieties of this plant, one much brighter than the other in the colour of the flowers. This is best grown in a pot, suspended from the roof, close to the rafters. It requires to be potted in peat and sphagnum moss; ample drainage should also be given, as it enjoys a liberal supply of water. Messrs. Loddiges, of Hackney, used to cultivate this plant better than any other grower of Orchids whose collections I have seen; they treated it in the way above recommended. Native of Monte Video.

O. bifolium majus.—This is a superb variety of the preceding; the pseudobulbs are much larger, and the habit of the plant is altogether more robust. The spike is quite double the length of that of the ordinary form, and bears fully double the number of flowers; sepals and petals brown, faintly marked with yellow; lip very large, and brilliant yellow. These are produced in May and June, and continue in per-

fection a long time. It requires the same treatment as the preceding, and, like it, should be placed at the cool end of the *Cattleya* house. Native of Monte Video.

O. bicallosum.—A showy dwarf species, producing a single dark-green, thick, fleshy leaf; the spike is erect and many-flowered; sepals and petals dark brown; lip bright yellow. This makes a fine plant for winter blooming, and continues in perfection a long time. It is very much like *O. Cavendishii* in flowers and growth, but less robust. Native of Guatemala.

O. bicolor.—This is a fine species from the Spanish Main, and blooms in September; sepals and petals yellow, spotted with crimson. The lip is very large, deep yellow on the upper side, and almost white underneath. This will thrive on a block suspended from the roof.

O. calanthum.—A pretty, distinct, and free-flowering species, which thrives best potted in peat, and placed in the cool-house; the flower spike is long, and bears a profusion of its gay blooms; sepals and petals somewhat oblong, nearly as long as the lip, light yellow; lip broad deep yellow, the crest of the lip and column being stained with red. Native of Ecuador.

O. Cavendishii.—The large, broad, and fleshy leaves of this princely Orchid are of a rich and lively green; its bright yellow flowers are produced in great abundance from strong and branching spikes, and the fact of their appearing in the dull months of winter greatly increases its value. The flowers, even at this season, retain all their brilliancy for several weeks. It may be grown on a block or in a pot, but on account of its size seems to do best in the latter. Native of Guatemala.

O. chrysothyrsus.—This very showy and free-flowering *Oncidium* is a native of Brazil. It is free and compact in its growth, seldom growing more than a foot high, and pro-

ducing from the pseudobulb, when fully developed, a fine branching spike some three feet in length, covered with its lovely flowers; sepals and petals green, streaked with red; the lip is large and bright yellow. It succeeds well upon a block, and remains in bloom a long time. I saw a few fine varieties of this with Mr. Findlay, Botanic Garden, Manchester.

O. ciliatum.—A pretty species from Brazil, and very compact in growth, being about six inches high; the colour is a beautiful brown and yellow; it succeeds best on a block, but it must have good attention as to water at the roots.

O. cornigerum.—This plant bids fair to become highly ornamental, as it is very distinct in habit and appearance. The pseudobulbs are about nine inches long, producing deep green leaves of a peculiarly thick and fleshy texture; the prettily marked spike is formed after the growth is mature, and on it are borne the beautifully gay flowers, which are yellow, spotted with deep red; its season of flowering is April and May. Native of New Grenada and Brazil.

O. crispum.—A good dwarf-growing plant. The pseudobulbs are ovate, somewhat rough, and light brown, each supporting a pair of short coriaceous leaves; the spike is long, producing many large flowers; sepals and petals a rich coppery colour; lip the same colour, with lighter spots in the centre. This blooms at different times of the year, and lasts three or four weeks in beauty. It requires to be grown on a block of wood in the *Cattleya* house, and should never be allowed to get dry, for it seems to like plenty of moisture. Native of the Organ mountains in Brazil.

O. crispum grandiflorum.—A very fine variety of the preceding. Its blossoms are very large, twice the size of those of *O. crispum*, and deep rich brown in colour. It succeeds best on a block, and requires a good supply of water at the roots.

O. crispum marginatum.—The flowers of this variety are scarcely so large as those of the preceding one; they are, however, superior in size to, and richer in colour than, those of *O. crispum*, and, in addition, the sepals and petals are broadly margined with golden yellow, which affords a striking and beautiful contrast with the rich chocolate ground colour.

O. Crœsus.—A charming dwarf-growing plant; its pseudobulbs are slender, tapering upwards, supporting a pair of light green leaves; spikes short, few flowered; sepals and petals greenish yellow, tinged with brown; lip large, rich golden yellow, the crest prominent, and deep velvety black. It blooms very freely during summer, and continues a considerable time in full beauty. The plant succeeds best in the *Cattleya* house, either suspended from the roof upon a block, or potted in peat and sphagnum moss. Native of Brazil.

O. cruentum.—A very desirable species; pseudobulbs very dark green; leaves long, lanceolate; it produces fine branching spikes of yellow flowers; sepals and petals yellow, barred with brown; lip pale yellow.

O. cucullatum.—Although this is a small-flowered species, it is a very beautiful one. It is a dwarf-growing plant, and the flowers (which are in the sepals and petals rose colour, and in the lip reddish purple, spotted with deep purple) last a long time in perfection. Found in New Grenada at 8,000 feet altitude.

O. cucullatum flavidum.—Similar in habit to the species; sepals and petals yellow, blotched with brown; lip purple, margined with white. This is a distinct and very desirable form of this plant; it must be placed in the coolest house; the flowers are produced in spring, and continue a long time in beauty.

O. cucullatum macrochilum.—An entirely different-looking plant from the previous one. It grows about a foot high, pro-

ducing flower spikes two feet in length, upon which are borne its beautiful flowers, which are in the sepals and petals rich plum and crimson; lip mauve, spotted with dark violet. Native of New Grenada.

O. divaricatum.—A small but abundant-flowering species; the flowers are produced on long branching spikes during the summer months; sepals and petals yellow, blotched and barred with brown; lip orange yellow: it continues in perfection a long time. This is a useful plant for all purposes when well grown: pot culture suits it best. Native of Brazil.

O. euxanthinum.—A plant having much the appearance of *O. bifolium*, and requiring similar treatment. The flowers are numerous, of moderate size, and very showy; sepals and petals small greenish yellow, banded with brown; lip large, rich yellow: it blooms during the autumn. Native of Brazil.

O. excavatum.—A robust-growing plant, with light green leaves and pseudobulbs; it should be potted in good fibrous peat, and placed in the cool-house; the flower spike is long and branched, and bears an immense quantity of its richly-coloured flowers; sepals and petals rich yellow, profusely blotched with cinnamon brown; lip also rich yellow, blotched only on the crest. This is also known by the name of *O. aurosum*. Native of Peru.

O. excavatum Dawsoni.—This, though bearing some resemblance to *O. excavatum*, is very much stronger and more robust in all its parts. The branching spikes are five feet long, upon which its lovely large bright yellow and rich brown flowers are borne in great profusion. I had the pleasure of seeing a specimen of this splendid variety in bloom with T. Dawson, Esq., Meadow Bank, each spike five feet high, bearing upwards of a hundred flowers: it was truly a noble object.

O. flexuosum.—A good old species from Brazil, producing

showy flowers in abundance on a long spike; blossoms yellow, slightly spotted with brown. It blooms at different times of the year, and continues for several weeks. There are two varieties of this plant; one called *majus*, which has much larger flowers than the other, though of the same colour: this is a scarce variety, and is best grown in a pot with moss.

O. Forbesii.—A truly handsome dwarf species from Brazil; flowers large and very distinct, the colours being yellow, scarlet, and white; it blooms in November. This is a very rare plant, and grows best on a block with moss.

O. hæmatochilum.—A fine compact-growing plant, similar in habit to *O. Lanceanum;* leaves short, thick, and fleshy, dark green; spike erect; flowers moderate size; sepals and petals greenish yellow, blotched with chestnut; lip rich crimson and rose. A scarce Orchid. Native of Guatemala.

O. holochrysum.—This, though long known to botanists, like many more fine things, has only recently become known to cultivators. The plant is similar in habit to *O. bifolium*, but the bulbs are beautifully spotted; the flowers are rich golden yellow, and set very densely upon the spike. No collection should be without this charming plant, which grows freely in a low temperature. Native of Peru.

O. hyphæmaticum.—This is a beautiful little plant, with small oblong pseudobulbs bearing a single oblong-lanceolate, obtuse leaf. The flowers are large, but somewhat laxly set upon the branching raceme; sepals and petals purplish brown, blotched with a deeper hue of the same colour; lip rich deep yellow. The flowers of this species are very showy, as, in addition to the colours already named, they are blood-red on the outside. It should be grown in peat and sphagnum, and kept in the cool-house. The flowers are produced during the latter part of summer and beginning of autumn. Native of Ecuador.

O. incurvum.—A pretty distinct dwarf Orchid, producing

white and brown flowers during autumn and winter; it lasts long in beauty, and is best grown in a pot with peat. This is a very fine species when well grown. I have seen it growing in a cool-house, and bearing twenty-five spikes, two feet high, with Mr. Anderson, gardener to T. Dawson, Esq. Native of Mexico.

O. Kramerianum.—A very fine Orchid, somewhat in habit like *O. Papilio;* the pseudobulbs are very dark, the leaves brightly spotted. It makes a long, knotty-jointed flower spike, with flowers the same shape and colour as the before-mentioned species, but instead of being banded with the rich dark brown on the yellow, the darker colour is distributed over the flower in a profusion of spots. The margin of the lip is beautifully undulate. Native of Central America.

O. Lanceanum.—A remarkably handsome and distinct plant, with beautifully spotted foliage; flowers large, and produced on a stiff spike about a foot or more high; sepals and petals bright yellow, blotched with crimson; lip rich violet. Of this plant there are two varieties, one having the lip almost white. It blooms during the summer months, lasting four or five weeks in good condition, if the flowers are kept free from damp. This is best grown on a block or in a basket, with moss or peat, and makes a splendid plant for exhibition; but we seldom see it in good condition. Native of Guiana.

O. leopardinum.—A very free-flowering and pretty Orchid. It is a compact-growing species, and produces flower spikes some three feet high, covered with yellow flowers, spotted with brown. Native of Peru.

O. leucochilum.—A desirable and distinct species from Mexico, producing spikes sometimes as much as ten feet long; sepals and petals yellowish green; lip a pure white; it blooms at different times of the year, and lasts a long time in perfection. Best grown in a pot.

O. Limminghei.—This species is perhaps the most singular in the whole genus; the habit is similar to that of a *Sophronites;* the leaves are dark green, arranged in a distichous manner, and netted with veins of bright brown; the flowers are golden yellow, richly spotted with brown. It succeeds admirably in a somewhat cool temperature. Native of Brazil.

O. longipes.—A beautiful compact small species from Rio Janeiro, growing about six inches high, and producing spikes of flowers in great abundance; lip large and of a bright golden yellow; petals brown, tipped with yellow. It blooms during the summer months, and will do well on a block.

O. luridum Dodgsoni.—A splendid variety, which I have only seen in the choice collection of R. B. Dodgson, Esq., at Blackburn, Lancashire. The leaves are very thick and fleshy, in the way of *luridum*, but broader and longer, producing flower spikes seven feet long, and much branched, bearing between three and four hundred flowers on each; colour orange and yellow, barred with dark brown. Under the care of Mr. Whitehead this has become a splendid specimen, potted in peat and sphagnum moss, and treated with a liberal supply of both heat and moisture. Native of the West Indies.

O. luridum guttatum.—A fine variety from Jamaica: it produces long spikes of flowers, which are yellow, brown, and red in colour; it blooms during the summer months: continues in perfection a long time, and is best grown in a pot with peat.

O. macranthum.—This splendid plant was introduced by the Messrs. Backhouse, of York. It is robust in growth, with large pseudobulbs and dark green leaves; spike several feet long, twining, branching, and many-flowered; flowers from three to four inches across; sepals and petals very round and broad, thick and fleshy, rich yellow, tinged with purplish

brown; lip hastate, much smaller, yellow, the side lobes being dark purplish brown. It is perhaps the grandest *Oncidium* yet introduced; the cool-house suits it best, and it should be potted in peat and sphagnum moss, with good drainage. It blooms during spring and early summer; lasts long in full beauty. This plant was first exhibited from the fine collection of Lord Londesborough. It is beautifully figured in the second series of Warner's "*Select Orchidaceous Plants.*" Native of New Grenada.

O. Marshallianum.—This lovely plant is a native of South America; it is a near ally of *O. crispum*. The flowers are very large, bright golden yellow in colour, and marked with rich brown spots. This was bloomed very finely by Mr. Wilson, gardener to W. Marshall, Esq.

O. nubigenum.—This is a lovely addition to our cultivated Orchids, and one that should succeed under the coolest treatment, growing as it does at a greater elevation than any other known—viz., 14,000 feet above the sea level. It is somewhat more robust in all its parts than *Odontoglossum Phalænopsis*, but the flowers are in shape very like diminutive examples of that species. The sepals and petals are brownish, shaded with crimson; lip generally white, yellow at the base, marked with violet or purple; but in the manner of its markings and intensity of colour it appears to be very variable.

O. oblongatum.—A handsome free-flowering species, from Guatemala, compact in habit, with short thick pseudobulbs; foliage light green, about twelve inches in length; flowers very showy, of a bright yellow, and of good size; blossoms during the winter months, and continues a long time in perfection; it succeeds best in a pot.

O. obryzatum.—Of nice compact habit, growing freely in the cool-house; producing in great abundance its fine branched spikes of bright yellow flowers, barred with brown, and which

yield a delicious perfume. There are many varieties of this plant. Native of Ecuador.

O. ornithorhynchum.—A charming free-flowering Orchid from Mexico. It grows ten inches high, and produces graceful drooping spikes of flowers during the autumn and winter months; colour delicate rose, and beautifully scented. This does best in a basket, in which the flowers are shown off to good advantage; a general favourite with Orchid growers. There are two varieties of this; one having darker and larger flowers.

O. Papilio majus.—A truly magnificent Orchid from Trinidad, with flowers the shape of a butterfly. It continues blooming from the old flower stems for years—as soon as one flower fades, another appears in the same place; the colour of the flowers is rich dark brown, barred with yellow; lip very large, with bright yellow in the centre, and edged with dark brown. This will do either in a pot or on a block. There are several varieties of *O. Papilio*, but *majus* is the best.

O. Phalænopsis.—This plant is in the way of *O. cucullatum*, but more robust in growth; the flowers are also much larger, and the lip is of a very different form. Pseudobulbs ovate, about three inches long, and very dark green; leaves produced in pairs, and also deep green; spike slender, bearing five or six large flowers; sepals and petals about the same size, rich cream-colour, barred and spotted with beautiful violet and crimson; lip large, creamy white, spotted the same as the petals, and having in addition a golden yellow crest. It should be grown in the cool-house. Native of Peru.

O. phymatochilum.—A pretty species from Brazil, and very distinct from all others in flower as well as in growth. The pseudobulbs are thick; the foliage dark green, attaining

a height of twelve inches; flowers very curious; sepals and petals yellow and reddish brown; lip white. This is a species which ought to be in every collection; it blooms during May and June, and continues in flower two months at a time; it is best grown in a pot, in peat.

O. pulchellum.—A beautiful dwarf compact species from Jamaica, attaining a height of about six inches, with small pseudobulbs and leaves, and it produces its spikes of white flowers in abundance during the summer months, remaining a long time in perfection. It thrives well on a block, with plenty of moisture at the roots.

O. pulvinatum.—A free-flowering Brazilian species, compact in habit, and growing about a foot high. The flower spikes not unfrequently ten feet long, the colour of the blossoms being yellow, orange, and brown. It blooms during the summer months, and lasts a long time in perfection; pot culture and peat suit it best.

O. pulvinatum majus.—A fine Brazilian variety of the preceding, growing in the same way, but having blossoms much larger and brighter in colour. This I have only seen in the collection of E. McMorland, Esq.

O. reflexum.—This very handsome Mexican *Oncidium* should find a place in every collection. Its dwarf habit, easy culture, and the numerous long spikes covered with abundance of its large bright yellow flowers, which enliven the house as autumn is approaching, should make it a universal favourite.

O. Rogersii.—This exceedingly showy and free-flowering species should be grown in the *Cattleya* house, potted in peat and sphagnum moss. In habit and appearance it resembles *O. bifolium majus*, but is more robust than that plant, and the spike is also much larger and branched, bearing as many as one hundred and seventy flowers, which measure about two and a half inches across; sepals and petals small; lip large,

flat, and spreading, deeply three-lobed in front, and rich golden yellow in colour. It blooms during winter, and is said to be a variety of *O. varicosum*. Native of Brazil.

O. roseum.—A pretty small-flowering species from Honduras. The flowers are rose coloured, spotted with red; it blooms at different times of the year, lasts six weeks in good condition, and is best grown in a pot, with peat.

O. roseum superbum.—This is a fine large variety of the preceding, which I saw in the collection of the late T. West, Esq., Clapham Park; it is a magnificent plant, making spikes five feet long, covered with its beautiful large rich crimson and white flowers.

O. rupestre.—A very handsome cool-house species: the pseudobulbs are smooth and stout, pale green; leaves ligulate, about a foot long, and dark green; flowers numerous, produced on a much-branched spike; sepals and petals bright flame colour, spotted with brown; lip similar in colour. Native of Peru.

O. sarcodes.—A fine species, with handsome flowers, from Brazil, and producing its branching spikes of yellow and crimson flowers during March and April. This species is finely flowered in the collection of H. H. Gibbs, Esq., Regent's Park. A very rare compact-growing plant, which is best grown in a pot, with peat.

O. serratum.—A pretty species which should be grown in rough fibrous peat, and placed in the cool-house. The pseudobulbs are oval, some six inches high or more, dark green, bearing rigid acute leaves of the same colour; spike twining and branched, from six to twelve feet long, bearing many large flowers, which are bright chocolate brown, margined with yellow; sepals much crisped at the margins, the lower ones much lengthened out; petals smaller and connivent; lip small. This plant is sometimes called *O. diadema*. Native of Peru.

O. sessile.—A pretty species, of compact growth, from Santa Martha: it produces its slender spikes of yellow flowers, spotted in the centre with pale cinnamon colour; blooms during the spring months. This fine species was flowered in 1850 by Mr. Iveson, then gardener to the Duke of Northumberland.

O. sphacelatum majus.—A good free-flowering Orchid, from Honduras, producing its long branching spikes of flowers in April and May, lasting three or four weeks in beauty. The colour of the flower is yellow, barred with dark brown; it is best grown in a pot with peat or moss.

O. splendidum.—This is a grand and very distinct plant. It has short roundish dark green pseudobulbs, which support a single erect thick and fleshy deep green leaf; the spike is erect, about two feet long, and branching; flowers large and very showy; sepals and petals small, greenish yellow, blotched with brown; lip large and flat, of a uniform rich clear yellow. It should be grown in the *Cattleya* house, in a pot. The flowers are produced during spring and early summer. I saw this superb species blooming beautifully with Mr. Denning, gardener to Lord Londesborough, in 1870, and also again this spring with Mr. Whitehead, gardener to R. B. Dodgson, of Blackburn.

O. Sprucei.—This species in habit somewhat resembles *O. Ceboletta*, but its terete leaves are more swollen in the centre; it produces its bright flowers in great profusion, and from its distinct habit is a good addition to a collection. Native of South America.

O. trilingue.—A very distinct and peculiar plant, still very rare in collections; it very much resembles *O. serratum*, to which, indeed, it is nearly allied. Sepals and petals rich chocolate brown, edged with light yellow, the margins undulated; lip very singular in form, brown with a yellow crest.

ONCIDIUM SPLENDIDUM,

Guatemala.

It should be potted in fibrous peat, and grown in the cool-house. Native of Peru.

O. unguiculatum.—A pretty winter-flowering species from Guatemala; the large yellow flowers are produced on a long branching spike, three or four feet high, lasting a long time in perfection. It succeeds best potted in good fibrous peat.

O. variegatum.—A pretty species from the West Indies; it grows six inches high, and has dark evergreen foliage; spikes branching and upright, bearing many blossoms of a rosy pink colour, and continuing in beauty for several weeks; it is best grown on a block with plenty of moisture at the roots.

O. xanthodon.—This plant belongs to the *O. serratum* section, and although the flowers are not so large as in that species they make a good display from their being so freely produced. In growth it very much resembles *O. serratum;* the flower spike is very long and trailing; sepals and petals rich dark brown, bordered with yellow; lip brown, and yellow in the centre. Native of Ecuador.

PALUMBINA.

P. candida.—This plant, though nearly allied to *Oncidium*, is very distinct in habit and appearance. It has light green leaves and pseudobulbs, and produces upon its slender erect spikes several flat waxy white flowers, which continue in perfection a long time. It is from Guatemala, and thrives best under rather cool treatment; a rare and interesting species. This will do in a pot, with peat, moss, and good drainage, but it does not require much water at the roots at any time.

PAPHINIA.

Of this pretty genus there are only two with which I am acquainted, but both of them are well worth growing, being compact in habit, and having short pseudobulbs and flag-

shaped leaves from six inches to a foot in length. They succeed best in the *Cattleya* house, in pots, in good fibrous peat, with plenty of drainage, and enjoy a liberal supply of water at the roots during the growing season. Propagation is effected by dividing the bulbs.

P. cristata.—A pretty dwarf free-flowering species from Demerara; it grows about eight inches high, and has small shining pseudobulbs, from the base of which the flower spike is produced; it usually bears about three flowers, the weight of which causes the spike to become slightly pendulous; sepals and petals dark chocolate, tinged with purple; lip white, barred with purple, and fringed. There are two varieties of this plant, one of which produces much darker flowers than the other. It blooms at different times of the year, and will remain in beauty for about a fortnight.

P. tigrina.—A fine species which grows some ten or twelve inches high, and produces its fine yellow and brown flowers on an upright spike, several together; it succeeds best potted in peat, and should have good drainage. The flowers last several weeks in perfection. Native of Trinidad.

PERISTERIA.

A singular genus of Orchids, of which there are several species, but only three that I can recommend as worthy the attention of the amateur. *Peristeria elata*, the Dove plant, is a noble species, and one which ought to be in every collection. These plants produce flower spikes from the side of their large pseudobulbs, near the base. They will succeed in either the East Indian or the *Cattleya* house, and should be potted in loam and leaf mould; a good quantity of water during their period of growth is necessary; afterwards give them a good season of rest, and keep them nearly dry at the roots: if allowed to get wet during their resting

shaped leaves from six inches to a foot in length. They succeed best in the *Cattleya* house, in pots, in good fibrous peat, with plenty of drainage, and enjoy a liberal supply of water at the roots during the growing season. Propagation is effected by dividing the bulbs.

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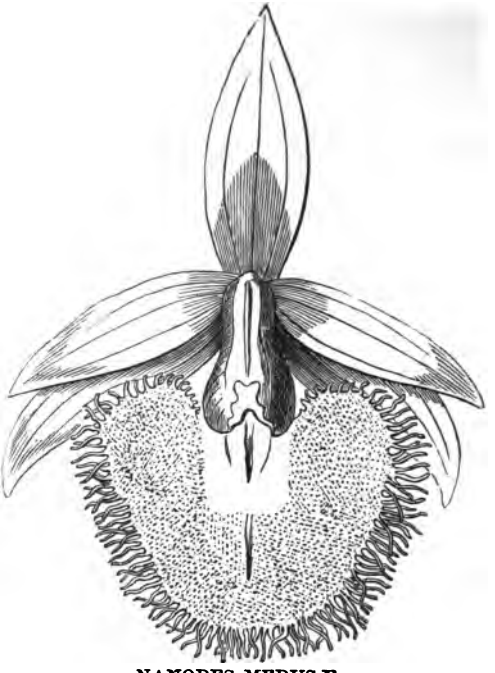
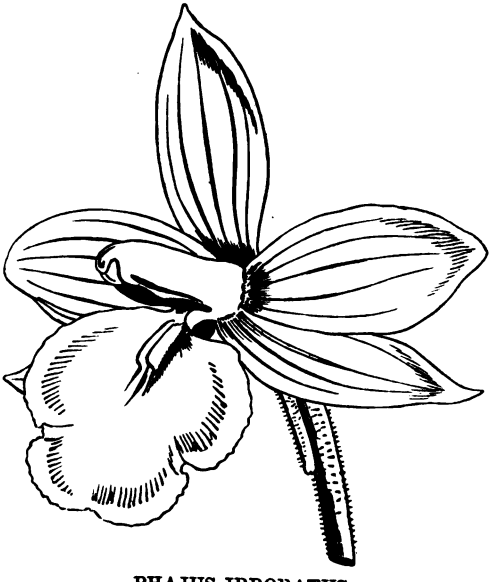


NANODES MEDUSÆ,
South West America.



PHAJUS IRRORATUS,
Garden Hybrid.

season they are apt to rot. They are propagated by dividing the plants.

P. cerina.—The pseudobulbs of this plant are strong and dark green, supporting a pair of large coriaceous leaves of the same colour. The spike is pendulous, and produces bunches of yellow flowers close to the bulbs; it blooms in June or July. Native of the Spanish Main.

P. elata.—A noble free-growing plant from Panama, with large pseudobulbs, and light green plaited leaves three or four feet high; spikes erect, three feet or more in height, bearing a quantity of white waxy flowers; the central parts of each flower presenting a very striking resemblance to the figure of a dove, whence it is called in the vernacular, *El Spirito Santo.* This plant usually flowers in July, August, and September, and continues blooming for two months when the growths are strong.

P. guttata.—A curious species, from South America. It produces spikes of red and yellow flowers close to the bulbs, which are pendulous, and hang over the edge of the pot. It blooms in September, lasting two or three weeks in perfection.

PHAJUS.

A fine genus of terrestrial Orchids, which produce their beautiful spikes of flowers very freely, and when well grown are noble objects. These plants are of easy culture, and will amply repay any amount of attention and care. They are large-growing plants, and when not in bloom their noble foliage is extremely ornamental. If large specimens are wanted, they should be grown in pots of large size, with loam, leaf mould, and rotten cow-dung, as directed in the remarks on Terrestrial Orchids. They require plenty of heat and moisture at their roots in their growing season, but the water should not touch the young growth. During their period of rest they may be

placed in a cooler house, and should be supplied with very little water. Propagation is effected by dividing the bulbs after the blooming season is past.

P. grandifolius.—This noble evergreen plant grows about three feet high, and produces its flower spikes one or two feet above the foliage, the colour of the flowers being white and brown. It blooms during the winter and spring months, and lasts long in beauty if kept in a cool-house. This is a most useful plant for winter blooming, as it will flower beautifully when grown in small pots, and in this state may be used for the decoration of apartments during the dull months, without suffering the least injury. It also makes a noble plant for exhibition when grown into a large specimen, but to retard it for this purpose it requires to be kept very cool during autumn and winter. It is an old inhabitant of our gardens. Native of China.

P. irroratus.—This is the result of a cross between *Phajus grandifolius* and *Calanthe vestita*. The pseudobulbs are conical, and bear dark green plaited leaves, similar to those of *P. grandifolius;* flowers large, produced upon an erect spike; sepals and petals rich cream colour, tipped with rosy-pink; lip nearly round, creamy white, stained with yellow towards the base. Its elegant flowers are produced during mid-winter. The same treatment as recommended for the other kinds suits this plant admirably. It is one of Mr. Dominy's beautiful garden hybrids.

P. maculatus.—A plant too much neglected by the majority of Orchid growers, but one that is very showy in spring. The pseudobulbs are large, somewhat ovate; the leaves long, dark green, spotted with yellow; the flowers are rich yellow, borne on short spikes in great profusion. There are two varieties of this plant; the best one is very showy and desirable. Native of Northern India.

P. Wallichii.—A fine large-growing plant, attaining some four or five feet in height, producing its long upright spikes of flowers in March, April, and May, and continuing to flower for six weeks. The blossoms are orange yellow in colour, or buff tinged with purple. It makes a noble plant for winter blooming, and also for exhibition purposes, if retarded as directed for *P. grandifolius*. For further notice of these plants, see chapter on Preparing Orchids for Travelling to Exhibitions.

PHALÆNOPSIS.

A genus containing comparatively few species, and these of not very large growth, but some of them producing magnificent flowers, which last long in beauty. Within the last few years has been added to it one of the finest of all Orchids—viz., *P. Schilleriana*, which has really beautifully variegated foliage, as well as wonderfully distinct and fine flowers. The known species are all compact handsome plants, requiring very little room, and are worth a place in every collection. They produce thick fleshy leaves, from the axils of which the spikes of charming flowers ascend. The flowers themselves are very freely produced, and last a long time; indeed, they may be had in bloom all the year round. I have seen *P. grandiflora* blooming for six months, and have exhibited the same plant for seven years at six exhibitions during each year, sometimes with as many as from seventy to eighty flowers expanded on it at one time.

The species of *Phalænopsis* now in cultivation, comprise some of the finest Orchids yet introduced to this country, and no collection, however small, should be without adequate representatives of these lovely plants, which are compact in habit and growth, have beautiful flowers and handsome evergreen foliage; free-flowering, and, as I have just pointed out,

continue a long time in perfection—qualities which proclaim them to be plants of more than ordinary value.

They all require the same kind of treatment, and an East Indian heat, together with a good supply of water during their growing season, for the various species are found in Java, Borneo, Sumatra, in Manilla, and some few of them in the Burmese territory, where the heat is high, a natural condition which ought to be imitated under artificial circumstances as nearly as possible. They are found growing on the branches of trees in damp, moist places, and on bare rocks where, during the rainy season, an immense quantity of water falls. Nevertheless, they are of easy culture, and if properly attended to are seldom out of order; but since they have no thick fleshy pseudobulbs to support them, they require, in order to grow them to perfection, somewhat more care and attention than the majority of this order. Thus, they need more moisture at their roots during the growing season—in fact, they should never be allowed to get dry, for if so, they are apt to shrivel, and often lose their bottom leaves, which spoils their appearance, the beauty of these plants consisting almost as much in their having good foliage as good flowers. The growing season is from March to the end of October, during which time the temperature by day should range from 70° to 75°, allowing it to rise to 80° or more by sun heat, provided the house be shaded. The night temperature should range from 65° to 70° in March and April; afterwards it may be allowed to rise a few degrees higher. During their resting season, from the end of October to February, the temperature should range from 60° to 65° by night, and 65° by day, or even a little more will not do any harm with sun heat. In giving air, a little should be admitted close to the hot water pipes, so that it may be warmed on entering the house; and some water should also be sprinkled about on

fine days, in the morning, so that the house may be dry by night.

Phalænopsids are grown in different ways. Sometimes they are placed on blocks, sometimes in pots or in baskets, and I have found them to succeed well under all three modes of treatment; they require, however, more moisture at the roots if grown on blocks, whilst if grown in pots, more drainage will be required than when they are planted in baskets. For pot culture, the best way is to place an inverted pot in the bottom of the one intended for the plant, and fill in the intervening space with potsherds, broken into pieces about two inches square, to within two inches of the rim; sphagnum, having a few small potsherds mixed with it, should then be placed upon the drainage, and the plant elevated three inches above the rim, taking care to keep the base of the plant well above the moss. The successful culture of *Phalænopsis*, as well as of all other plants, depends upon efficient drainage. If grown on blocks they should be placed on a good-sized one, so that there is plenty of surface for the roots to cling to. In fastening the plant on, first place a little live sphagnum on the block, then fix the plant on with copper wire, and afterwards hang it up near the roof, but not too near the glass, or the plants may get injured by cold, which should be specially guarded against during winter.

If the plants should get into an unhealthy condition, the best plan is to turn them out of their pots or baskets, and shake all the material away from their roots, wash them with clean water, cut off all the decayed parts of roots or leaves, and replace them on blocks with a little sphagnum, giving them a good supply of moisture, and placing them at the warmest end of the house, but not too much exposed to the light; under this treatment they will soon begin to root and improve in

appearance. I need hardly add that they should be kept clear of insects, especially thrips, which soon disfigure the foliage. Constant attention and frequent washing of the leaves with a sponge and clean water, or fumigating the house with tobacco smoke, is the way to keep clear of all such pests; the latter operation, however, should be conducted with great care.

These plants are difficult to propagate. To this rule, however, *P. Lüddemanniana* is an exception, as it produces young plants upon the flower spikes very freely. Sometimes the other species will also produce young plants on the old flower stems, and these should be left on till well rooted, and then placed on small blocks.

P. amabilis.—The Queen of Orchids. This magnificent plant, which comes from Manilla, produces its graceful spikes of flowers nearly all the year round. The flowers are each three inches across, and arranged in a distichous manner along the spike; sepals and petals pure white; the lip of the same colour, but beautifully streaked inside with rose pink. The flowers continue in perfection a long time, if they are kept free from damp, but if allowed to get wet they are apt to spot. I saw last year a remarkably handsome and healthy specimen of this plant, with as many as eleven perfect leaves, in the collection of J. H. Fernley, Esq., Didsbury, under the care of Mr. Allen.

P. amethystina.—An elegant little plant which, though not so showy as some of the genus, yet is a nice addition to this beautiful and popular family. The leaves are somewhat oblong, but narrower towards the base, stout, waved at the edges, and dark green; spike about a foot long, with a few short branches; flowers rather small and lax; sepals and petals white, spreading; lip white, tinged with yellow at the base, centre part rich amethyst suffused with purple, and deeply emarginate in front. Native of the Sunda Isles.

PHALÆNOPSIS AMETHYSTINA,

P. cornu-cervi.—A very pretty Orchid, originally found by Mr. Lobb, and which was frequently sent to England, but never arrived in a living state until two or three years ago. It is a native of Moulmein. This plant is not particularly showy in a small state, but when grown strong, it blooms very freely. The leaves are eight inches or more in length, and bright green. The flower stem is thickened and flattened at the top where the flowers are situated; sepals and petals yellow, tinged with green, and barred and striped with brown. It may be grown in a pot or basket, living sphagnum being the best material to pot it in; a liberal supply of water and heat is essential to its well-being,

P. grandiflora.—A truly handsome species from Java. The flowers are produced in the same way as in *P. amabilis;* and indeed, the only difference between the two is, that *P. grandiflora* has larger flowers, with yellow instead of pink in the centre of the lip; and the leaves are much longer, and of a lighter green colour. This makes a fine plant for exhibition.

P. grandiflora aurea.—This certainly is the grandest of the many varieties of this fine Orchid. It is a variety that bloomed among several hundred I imported from Borneo; the sepals and petals are unusually broad, and rounded, and the lip is conspicuously marked with deep orange. It is a compact-growing plant, with light green foliage, and is beautifully represented in Warner's "*Select Orchidaceous Plants.*"

P. intermedia.—A very pretty species, which resembles the other kinds in general habit. The leaves are pale green in colour, the flowers are medium-sized; sepals and petals white, shaded with rose, the lip being a deeper shade of the same colour. This beautiful plant is very rare; it was first sent to this country by Mr. Lobb. Native of Manilla.

P. intermedia Portei.—This beautiful and rare plant is a

native of the Philippines, and even there must be very rare. It is not unlikely to be a natural hybrid; let it, however, be hybrid or species, it ranks among the very handsomest of its class. In general habit it resembles *P. grandiflora*, but the under side of the leaf is dark purplish, more in the way of *P. amabilis*, and the leaves are about a foot in length, broad and dark-green above. The spikes are arched, supporting the large flowers; sepals and petals white, suffused with light rose; lip rich dark rose. The flowers are of good substance, and remain in perfection a very long time. This is well represented in Warner's "*Select Orchidaceous Plants.*"

P. Lowii.—This really charming species is a native of Moulmein, where it grows on bare rocks exposed to the full influence of the sun; in the rainy or growing season it is perfectly deluged with water, and in the resting season it loses its leaves, and under cultivation it requires great attention during this time or it will die entirely. The leaves are broad, somewhat thin in texture, and dark green. Compared with those of *P. grandiflora*, the flowers are small, but the sepals and petals are round, white tinged with rose, and the lip is a beautiful bright rose, suffused with mauve. Though a small plant, it produces a good spike of flowers. It is not so robust in growth as many species, and requires to be kept near the glass, so that it may get an abundance of light.

P. Lüddemanniana.—A native of the Philippine Islands. The whole plant is very similar to *P. rosea* in general appearance; the leaves are eight inches or more in length; the flower stem several feet long; sepals and petals white, beautifully barred with amethyst, the centre of the lip being richly marked with deep violet. There is no doubt this will prove itself, by cultivation, a very much more ornamental species than we have hitherto supposed. I saw it very fine in the collection of T. Jones, Esq., Manchester; the spike was two

feet long, and the variety good. This species produces young plants on the flower spikes more freely than any other kind.

P. rosea.—A small-flowering but very pretty species from Manilla. It grows in the same way as the former, but is much inferior to it in beauty. The leaves are somewhat oblong, slightly broadest at the apex, bright light green in colour; sepals and petals white, slightly tinged with pink; the lip deep violet in the centre, the side lobes stained in some varieties with rich orange. It blooms at different times of the year, lasting long in beauty. If the old spikes are left, they will keep blooming for several years, and as the spikes elongate the flowers come larger; it sometimes produces from twelve to fourteen spikes of bloom, and then makes a very showy specimen.

P. Schilleriana.—A magnificent species from Manilla, and which is undoubtedly the finest in cultivation, which I had the good fortune to be the first to introduce to the notice of English Orchid growers. It has beautifully variegated foliage, and is quite distinct from all other kinds. The leaves are similar in form and equal in size to those of *P. grandiflora*, of a dark green colour, mottled with irregular bands of white; the flower spikes are produced from the axils of the leaves, and in their native country are more than three feet long, and more branched than those of the other kinds. I have a dried spike, on which there has been developed more than one hundred blossoms. The individual blossoms measure more than two and a half inches across, and they are arranged in two rows along the spike; sepals and petals beautiful light mauve edged with white; lip of the same colour, with darker spots, the upper part being yellow, spotted with reddish brown; the inside is handsomely spotted—indeed, the whole aspect of the plant is very attractive. The roots of this plant are very distinct from those of the other species of this genus, being flat, and having a rough appearance; they are, moreover, very

free in growth. The flowers of this species continue for several weeks in full perfection. The finest display of *Phalænopsis* I have ever seen is in the collection of R. Warner, Esq., who has a magnificent lot of specimens. Of *P. Schilleriana* alone I have seen upwards of twelve hundred expanded blooms at one time. Mr. Warner sent a specimen of this plant to the St. Petersburgh Exhibition in 1869, which had one hundred and twenty expanded blooms upon it, and presented a most glorious spectacle.

P. sumatrana.—A remarkable plant from Sumatra, flowered for the first time in this country by J. Day, Esq. in 1865; leaves pointed, six or seven inches long, somewhat fleshy and bright-green in colour; sepals and petals yellowish white, banded or barred with streaks of reddish brown; lip white, spotted with orange, and streaked down the centre with violet. It requires the same treatment as the other species.

Pilumna.

P. fragrans.—A deliciously sweet-scented plant, very like *Trichopilia* in habit and appearance. Its flowers are produced on spikes three or four together, the sepals and petals being greenish white, the lip pure white. It succeeds well in the cool-house, and is best grown in a pot, with peat and moss, and good drainage; a good supply of moisture is requisite during the growing season, but when at rest less will suffice. It should be well elevated above the rim of the pot.

Pleione.

A genus of pretty small-growing deciduous plants, with flask-like pseudobulbs and light green membranous leaves. They are considered by some entitled to generic rank; other authors, however, make them only a section of the genus *Cœlogyne*, from which indeed they seem to differ but slightly,

except in habit. Every year, after finishing their growth, the leaves begin to die away, and this is the proper time to rest them, when they should have only just enough water to keep them from shrivelling. The flowers are produced during the winter and spring months, after a period of rest, and immediately precede the young growths, so that whenever the flowers are seen to be pushing up from the base of the pseudobulbs water should be given in moderate quantities. They are frequently called Indian Crocuses, throwing up their flowers as they do in spring, much like our common crocus, differing, however, considerably in shape, but like them very handsome and rich in colour. The *Pleiones* are far too little cared for by Orchid growers, many objecting to them on account of the leaves being absent at the time of flowering; but this is easily remedied by grouping them with Ferns, or other graceful green-leaved plants. They give little trouble if properly managed, but their wants must be supplied at the right time, which is the great secret in the treatment of most deciduous plants. Through being deciduous, they get neglected, and just at the time when they should receive most attention, and their beauties should be seen, they are found shrivelled and dead. They require a good season of growth, and after that, one of rest. The way in which I treat them, is to pot them in a mixture of loam, peat, moss, and sand, giving them good drainage and plenty of water while growing; this operation—the potting—should be performed immediately the flowers fade. After the pseudobulbs are fully formed, give just enough water to keep them from shrivelling; but, as before stated, when they begin to show flower, water freely, which will induce their blossoms to come finer. The *Cattleya* house is the most suitable place for them.

P. humilis.—A splendid dwarf-growing species from India, with dark green ovate pseudobulbs, in the way of those of

P. Wallichiana, and with flowers three inches in diameter; sepals and petals bright rose; lip white, spotted with crimson and striped with brown; it lasts in beauty two or three weeks.

P. lagenaria.—A fine dwarf species, also from India, in the way of *P. maculata;* flowers on single stems three inches long; blossoms three inches across; sepals and petals mauve; lip white, veined with crimson. This also continues a long time in perfection if the flowers are kept dry.

P. maculata.—A beautiful Orchid from the Khoosea Hills, with leaves six inches long; sepals and petals delicate white; lip same colour, beautifully barred with crimson. It blooms in October and November, continuing three or four weeks in perfection.

P. Reichenbachiana.—A very distinct species of this exceedingly handsome genus, which I saw last autumn in excellent condition with Mr. Beesley, gardener to S. P. Callander, Esq., Whalley Range, Manchester; the flowers were large, and produced two on a spike; sepals and petals rosy-lilac; lip suffused with rich purple and fringed in front with magenta. Native of Rangoon.

P. Wallichiana.—A truly handsome dwarf species from India, producing its solitary flowers in October and November, and lasting two weeks in beauty. The colour is of a deep rose, and the lip the same, with a dash of white in the centre; the blossoms are three or four inches across.

Polystachya.

This is a small genus, the species of which are mostly found in various parts of Africa; to this rule, however, there are a few exceptions. It is a family of small dull-coloured plants, and consequently does not find much favour at the hands of many Orchid growers.

P. pubescens.—This beautiful dwarf-growing species has for a long time been in cultivation in our gardens under the name of *Epiphora pubescens*. It has small pseudobulbs, producing two or three leaves, which are narrow, dull green, and slightly hairy beneath; raceme erect, short and many-flowered; flowers rich bright golden yellow, with a few purple lines. This plant grows well in the cool-house, potted in peat and moss, and likes a good supply of water—indeed, it should never be allowed to get dry. It is an abundant bloomer, and is quite an exception to the majority of *Polystachyas* in being very showy. Although introduced many years ago, it is still very rare. Native of Algoa Bay.

PROMENÆA.

This is a small genus of pretty little dwarf-growing Orchids, about three inches high: they produce their flowers from the base of their pseudobulbs, which are drooping, and hang over the edge of the pot. They are not very showy plants, but very curious, and deserve to be in every collection. They are best grown in pots with peat, the same treatment as that recommended for *Paphinia cristata* being suitable for them.

P. citrina.—This is a native of Brazil, and produces its flowers, which are deep rich yellow, spotted with dark crimson at the base of the lip, at the end of summer, lasting in beauty for several weeks.

P. Rollissoni.—This species also produces its pale yellow flowers during the autumn, lasting three weeks or more in beauty. Native of Brazil.

P. stapelioides.—In this the pseudobulbs are small and nearly round, bearing a pair of thin light green leaves. The colour of the sepals and petals is greenish yellow, spotted and barred with dark purple; the lip is deep purple,

approaching to black. It blooms in July, August, and September, and lasts long in perfection. Native of Brazil.

Renanthera.

This genus is very nearly allied to *Vanda*, and the treatment recommended for that genus will suit these plants also. They are all showy plants, with distichous leaves. They require the temperature of the East Indian house, and should be potted in living sphagnum moss, with an abundance of drainage. They are propagated in the same way as *Aerides*.

R. coccinea.—This is a somewhat scandent straggling plant, often twelve feet or more in height, with long stems furnished with leaves on either side; the latter are about three inches long. The flowers, which are beautiful orange-scarlet, are produced from the axils of the leaves, on long branching panicles, and they continue in bloom several weeks together. This plant requires to be so placed as to be well exposed to sunlight, which is the only sure way of inducing it to bloom; it is indeed a shy bloomer, which doubtless accounts for it not being much cultivated. By letting it grow up the roof, where it gets plenty of light and sun, it will, however, most likely flower when sufficiently strong for that purpose. I have seen it do well on a large block suspended from the roof, and thus grown have known it to produce as many as five spikes at one time. When well bloomed it is well worth all the care that is bestowed upon it, for it is really a superb and showy plant. During the summer it should be treated to a liberal supply of heat and moisture, as from March to October is the time it is in vigorous growth. While resting in winter, let it have but little water—just enough to keep it from shrivelling. The most suitable material to pot it in is sphagnum moss, which, as before remarked, should be kept moist during the growing

season. I have several times seen it blooming very freely with Mr. Speed, gardener to his Grace the Duke of Devonshire, at Chatsworth. Native of Cochin China.

R. Lowii.—This most remarkable and exceedingly rare Orchid is a native of Borneo, where it grows on high trees, in very humid forests. It is very distinct in growth from any other species, and is easily distinguished by its broad, straight dark green foliage, thick fleshy roots, and remarkably long drooping flower spikes, which attain from six to twelve feet in length. The most remarkable feature of the plant is the production of two kinds of flowers on the same spike. The flowers are reddish brown, intersected by irregular lines of greenish yellow, while the two at the base of the spike are of a tawny yellow, spotted with crimson. It blooms during July, August, and September, and continues fresh for several weeks. The plant succeeds well along with *Vandas* and *Aerides*, but it is a shy bloomer, and generally grows four or five feet in height before commencing to flower. I once, however, saw a fine plant exhibited, about three feet high, with three spikes of bloom, by Mr. Mitchell, gardener to R. F. Ainsworth, M.D., Lower Broughton, Manchester. The plant is evergreen, and grows several feet high; it throws out thick fleshy roots, and bears dark green alternate leaves eighteen inches in length. It is beautifully figured in Warner's "*Select Orchidaceous Plants*," from a remarkably fine specimen in the possession of J. H. Fernley, Esq., Didsbury, Manchester. This plant was formerly included in the genus *Vanda*, and, indeed, is to be found in many collections under the name of *V. Lowii*, but it is undoubtedly more correctly placed in *Renanthera*.

RESTREPIA.

A small genus of epiphytal Orchids, somewhat resembling *Pleurothallis*, and consisting of small-growing plants with

slender stem-like pseudobulbs, each supporting a single leaf. There are but few kinds of this genus worthy the attention of Orchid amateurs, although, where these plants are grown for study and scientific purposes, the small microscopic flower, or the large showy-coloured flower, are equally valuable. Such a collection is to be found at the establishment of W. W. Saunders, Esq., of Reigate, under the care of Mr. Green, and I should be glad to see many more Orchid growers take the matter in hand in the same enthusiastic manner. The *Restrepias* succeed best in the cool-house with *Odontoglossums*, and should be potted in a mixture of peat and sphagnum; a moderate supply of water all the year round will be found necessary for their well-being. They are increased by dividing the plants, taking care to have a leading growth or eye to each piece.

R. antennifera.—This is a very elegant little plant, with slender stems which support a single ovate-oblong dark green leaf. The exceedingly curious and handsome flowers are produced upon short slender stems from the base of the leaves. The sepals are very long, the upper one yellowish-white, streaked with purple, the lower ones reddish-crimson, profusely dotted with blackish-purple; petals antennæ-like, narrow, clubbed at the ends, and similar in colour to the dorsal sepal; lip small, of the same colour as the lower sepals. It is well deserving a place in every collection for its extreme beauty, free flowering properties and curious structure. It blooms throughout the whole summer. Native of Columbia.

R. elegans.—A pretty little plant, which very much resembles the preceding in habit. The flowers are not so long as those of *R. antennifera*, but marked somewhat in the same manner. It succeeds admirably in the cool-house. Native of Columbia.

SACCOLABIUM.

This genus contains some of the finest Orchids in cultivation. They are very compact in their growth, and are furnished with long, thick, and fleshy pendent evergreen foliage. From the axils of the leaves their long graceful racemes of flowers, which often measure from one to two feet in length, are produced. Their habit of growth is the same as that of *Aerides*, and they require the same heat and treatment. The various species of this genus mostly inhabit the hottest parts of India, and are found growing on the branches of trees. They are propagated in the same way as the *Aerides*, and are liable to become infested by the same sorts of insects. The following species comprise the best of this beautiful genus. There are several others in cultivation, some of which are small flowered, and not worth the attention of amateurs with limited space. I have only named those that are the most beautiful, and which ought to be in every collection, however small, as they are very handsome even without flowers.

S. ampullaceum.—A distinct, compact-habited, and pretty Orchid from India, with straight dark-green leaves about three or four inches in length; it grows about ten inches high, and produces erect spikes of flower about six inches long, of a beautiful rosy-pink colour, in May and June. This plant will succeed on a block, or in a basket with moss, and remains in beauty three weeks.

S. ampullaceum moulmeinense.—A superb variety of the preceding; it is somewhat more robust in growth, and the leaves are spotted on the under side with dull brown; the spike is long and dense, and the flowers of a uniform rich deep rose. It is a native of Moulmein.

S. bigibbum.—This very pretty species is at present very rare; it is a small close-growing plant, with somewhat oblong

bright green leaves, about four inches long. The spike is short and drooping, bearing eight or more of its curious flowers. Sepals and petals lemon colour; lip white, with a yellow centre and pretty frilled edge. It blooms about November. Native of Burmah.

S. Blumei.—A beautiful distinct species from Java. The leaves are long and arched, præmorse at the ends, light green with a few parallel lines of dark green, extending from base to apex, on the under side. It produces its flowers, which are violet and white in colour, in July and August, and lasts three weeks in perfection.

S. Blumei majus.—A charming variety of *S. Blumei.* The colours of the flowers are the same as in the preceding; but the flowers and spikes are much larger, and the whole plant is of much stronger growth.

S. Blumei Russellianum.—This is the very finest of the *S. Blumei* section I ever saw; the spike of flowers is very long and massive, the blooms large, dense, and beautifully spotted. It bloomed in the fine collection of J. Russell, Esq., of Falkirk, under the skilful management of Mr. Sorley. The flowers are produced in September.

S. curvifolium.—A handsome, compact-habited, dwarf-growing species, from six inches to a foot in height, with light green foliage. It is a free-flowering kind, with orange-scarlet blossoms, and blooms in May and June. It will thrive well on a block suspended from the roof, and was until within the last few years very rare, but is now more plentiful. Native of the East Indies.

S. curvifolium luteum.—In habit like the preceding, the flowers, however, instead of being orange-scarlet, are clear yellow, which renders it very distinct from the ordinary form. A somewhat rare plant. Native of Moulmein.

S. furcatum.—A distinct and fine species from India, which

grows somewhat slowly, and has short leaves about eight inches long. The flowers of this are more laxly set on the spike than in *S. guttatum;* colour white, spotted with rose. It blooms during July and August, and continues in perfection three weeks.

S. giganteum.—This very beautiful species is very much like *S. violacea*, and has been in the collection of the Bishop of Winchester, at Farnham Castle, for several years, but it is so exceedingly slow in growth that its great beauty was never seen in this country till exhibited by Messrs. Veitch, in the autumn of 1866. The leaves are very stout and broad, about a foot long, and three inches in width. It produces long racemes of thickly set flowers from the axils of the leaves; sepals and petals white, the latter spotted with lilac; lip lilac and violet. It continues in bloom a very long time, and is deliciously sweet. Native of Burmah.

S. guttatum.—A remarkably handsome species from India. The leaves are long and broad, somewhat curved, thick and fleshy, præmorse at the ends, and dark green. It blossoms from May to August, and remains three or four weeks in perfection, if removed to a cooler house, and kept free from damp. The flowers are closely set upon the spike, which is upwards of a foot in length, and form massive wreaths of bloom; sepals and petals waxy white, spotted with deep rosy-purple; lip small, purple. There are two or three varieties of this species, which makes one of the finest plants for exhibition. Some remarkable specimens of it were shown in the year 1850, with from twenty or twenty-five spikes of flowers on each.

S. guttatum giganteum.—A magnificent variety, the leaves of which are longer than those of *S. guttatum*, and spotted; the spikes are also much longer, and the flowers more distinct in the markings; it makes a superb exhibition plant, as it

blooms in June and July, and will last three or four weeks in perfection.

S. guttatum Holfordianum.—This splendid variety is the finest of the genus. The leaves are broader than those of the ordinary form of *S. guttatum*, and more præmorse at the ends; the flower spikes are also much larger and longer, and the flowers are of a richer colour than those of the kind just named, the lip being a rich crimson. This was bloomed first by R. S. Holford, Esq., Weston Birt, Gloucestershire, in compliment to whom it is named. It is figured in Warner's "*Select Orchidaceous Plants.*"

S. Harrisonianum.—This is no doubt a variety of *S. violaceum*, to which it bears great resemblance. The leaves are, however, of a somewhat lighter green colour. It produces dense spikes of large pure white blooms, which are remarkably sweet scented, and as these are produced in the winter, they become doubly valuable. Native of Pulo-Copang, an island in the Chinese Seas.

S. miniatum.—A pretty, distinct, small-growing Orchid from Java. It is not so showy as some of the other species named, but it is well deserving attention on account of its distinct colour. It produces its short spikes of vermilion-coloured flowers in March and April, lasting three weeks in beauty. This will do well on a block of wood without moss.

S. præmorsum.—A lovely species from Malabar. The leaves are stout and fleshy, broad, with very præmorse end, and dark green; spike long and dense; flowers white, thinly spotted with lilac. It blooms in May and June: lasts three weeks in perfection. A slow-growing kind, which makes a fine exhibition plant. There has been a variety imported which is more free in growth, produces much finer spikes, and is altogether superior to the form first introduced.

S. retusum.—A fine handsome free-growing species, more

robust in habit than most others. It blooms in May and June, producing in great abundance long spikes of flowers, which are waxy white, beautifully spotted with pink. These continue in perfection three or four weeks. It is a useful plant, and one which comes into bloom rather earlier than any of the other kinds. Native of Java.

S. violaceum.—This magnificent species is a native of Manilla, where it luxuriates on the stems and branches of trees. The leaves are a foot or more long, two inches in breadth, and rich deep green, somewhat striated with lines of a deeper colour, and from the leaf-axils it produces spikes of bloom, twelve to fifteen inches in length; the flowers are very numerous, the sepals and petals pure white, spotted with mauve, the lip dark mauve, marked with deeper coloured lines. It generally blooms in January and February, and lasts four or five weeks in perfection if kept from the damp. The plant succeeds in a pot well drained and surfaced with a little growing sphagnum moss.

SCHOMBURGKIA.

Of this genus only a few are worth cultivating where space is at all limited, though the blossoms of many are individually very attractive; the fact is, they are too shy in flowering, and they, as a rule, produce long spikes with but very few blossoms on them. In growth they resemble *Cattleyas* or *Lælias*, except that they are less compact. The pseudobulbs are erect, twelve inches or more in length, with generally from one to three leaves on the top; and their flower spikes proceed from the top of the bulbs, and are from three to five feet long. They succeed on blocks or in baskets suspended from the roof, in moss or peat mixed together, in the *Cattleya* house, or they may be grown in pots equally well if that system is preferred. A liberal supply of water is necessary during

the growing season; but after they have completed their growth, it should be withheld until they begin to show flower. Propagation is effected by dividing the bulbs. The following are the best and most showy species I have seen:—

S. crispa.—A pretty species from Brazil, with pseudobulbs a foot high, and spikes from three to five feet long, on the apex of which are situated its yellow and brown flowers. This does best in a pot or basket, and will grow to a considerable size; it blooms during winter, and will last three weeks in perfection if the flowers are kept dry.

S. Lyonsii.—A handsome kind, the pseudobulbs of which grow about a foot high, from the top of which its flower spikes are produced, and which grow three or four feet long; the flowers are white, spotted with purple and yellow. It will succeed either on a block or in a basket suspended from the roof, and lasts in bloom three weeks. Native of Jamaica.

S. tibicina.—A species from Honduras, and the best I have seen of the genus. The pseudobulbs are hollow and large when well grown, indeed it will not flower until the bulbs are strong. The blooms are produced on spikes five feet or more in length, many together; each flower measures more than two inches across; sepals and petals pink, spotted with rich chocolate; lip white, with rose colour on the side. Its usual time of blooming is May and June, and it will keep flowering for six weeks. I have found this plant grow best on a block, with plenty of heat and moisture during the growing season.

Scuticaria.

A small genus of curious plants, producing very handsome flowers, and long evergreen terete leaves. The flower spike proceeds from the base of the pseudobulb, and is about two inches high. They are best grown in the East Indian house, either on blocks or in baskets with moss, a liberal supply

of water being necessary at the roots in the growing season. They are propagated by dividing the plants just as they begin to grow.

S. Dodgsoni.—This is a very distinct and handsome species. The leaves are terete, some twelve or fifteen inches long, and dark green; flower spike short, bearing two flowers; sepals and petals light brown inside, darker at the base, and blotched with light yellow; lip white, beautifully streaked with light rose and yellow. It is said to have been introduced from Demerara.

S. Hadwenii.—A pretty Orchid, with foliage a foot long. This plant is very much like *S. Steelii;* the only difference between the two is, that the flowers of *S. Hadwenii* are more erect, and the scape is an inch or two higher. The colour of the flowers is nearly alike. A rare plant. Native of Brazil.

S. Steelii.—A handsome plant, from Guiana. The leaves are terete, pendulous, and dark green, some three or four feet long, and taper to a fine point; flowers yellow, spotted with crimson. It produces its blossoms at different times of the year, lasting a long time in perfection. Of this plant I saw three varieties growing in the collection of the late T. Brocklehurst, Esq., under the care of M. Pass.

Sobralia.

This genus contains some very handsome species and varieties. They are all strong, free-growing terrestrial plants, with long slender reed-like stems, bearing dark green plaited leaves, from the summit of which the flowers issue; as many as six or more are produced from a single stem, but, except in very few instances, one at a time only is developed. The blooms in most of the species are large and brilliantly-coloured; and, although individually they last but a short time, this is amply compensated for by the quick succession of new flowers—as

soon as one decays another appears. They will grow either in the East Indian or Mexican house, and thrive best in pots of a large size, amongst rough fibrous peat, which suits them best, and about three inches of drainage; plenty of water at the roots in the growing season is essential to their well-being, afterwards much less will suffice. When these plants get too large, they should be turned out of the pot, and divided into several pieces, which will soon grow and make flowering plants. The following are amongst the best of this genus, which is far too much neglected by plant growers:—

S. Liliastrum.—A distinct species from Guiana. The flowers are white, and are produced in July and August; they, however, last but a short time in beauty. There are two varieties of this, one much better than the other.

S. macrantha.—A remarkably handsome Orchid from Guatemala; the finest of the genus. The flowers are large, six inches across, of a beautiful rich purple and crimson. It blooms during the summer months, and each flower lasts three days in perfection. This makes a fine plant for exhibition.

S. macrantha splendens.—A charming variety from Guatemala; flowering from June to August. It has darker flowers than those of *S. macrantha*, but they are not so large. There is a variety called "Woolley's," which is very dwarf in habit, and produces fine large flowers. J. Day, Esq., has some fine plants of this variety, which is very rare.

S. Ruckeri.—A very fine species from New Grenada. It grows two or more feet in height; the flowers are very large, the sepals and petals dark mauve, the lip, which is very open, crimson, with a white centre. The plant produces four flowers on a spike, open at the same time, and thus makes a grand display; and unlike many of the others it remains in bloom a considerable time. It is at present a very rare species, but

I hope we may get some of it imported, so that it may be in every collection.

SOPHRONITIS.

A small genus of Orchids containing several very beautiful species; most of the known kinds are worth cultivating, on account of their not taking up much room. They are small-growing plants, and thrive best on blocks of wood, or in small baskets, with a moderate supply of heat and moisture all the year. They are evergreen, producing their flowers from the top of the pseudobulbs, and are propagated by dividing the plants just as they begin to grow.

S. cernua.—A close-growing and small-flowering species, with small bunches of red flowers. It blooms during the winter, lasting long in beauty. Native of Brazil, about Rio.

S. coccinea.—An exceedingly beautiful kind, which should be either grown on a block with a little moss attached, or in a small basket with moss and a little peat, and suspended from the roof. The pseudobulbs are short, each bearing a single oblong leaf, about three inches in length, and dark green in colour; the flowers are upwards of three inches in diameter, of stout substance; sepals and petals brilliant scarlet; lip yellow, with vermilion bars. It blooms during the winter months. Native of Brazil.

S. grandiflora.—A truly handsome species from the Organ mountains. The flowers are large, and of a beautiful bright scarlet colour, lasting six weeks or more in perfection. It blooms in November and December. This plant ought to be in every collection. Of this species there are two varieties; one produces short obtuse leaves, with exceedingly brilliant coloured flowers; the other has longer leaves and bulbs.

S. violacea.—A pretty distinct species, from the same country as the former. The pseudobulbs are small and bear a single narrow dark green leaf. It produces its violet

coloured flowers in abundance during the winter months, and lasts long in beauty.

Stanhopea.

A most beautiful genus of epiphytes, most of which have somewhat ovate furrowed pseudobulbs, which bear a large dark green plaited leaf, some twelve inches or more long, and six or more inches broad. The scape proceeds from the base of the pseudobulbs, taking a downward direction. Flowers large, curiously formed, thick and waxy in texture, in most of the kinds highly coloured, and emitting a very strong perfume; but unfortunately they remain but a few days in perfection, which has probably led so many growers of this order to relinquish their culture. This is much to be regretted, for, as they are free-flowering plants, a succession of blooms renders them gay for a long time. *Stanhopeas* are of easy culture, and are best grown in baskets, with sphagnum moss, and suspended from the roof; they require a liberal supply of water in the growing season, and plenty of shade. The baskets should be made shallow, and open at the bottom and sides, so that the flowers may easily find their way through. After their growth is completed they are the better for a good period of rest, during which they should be kept nearly dry at the roots. They will grow well in either the East Indian or Brazilian house. I shall only mention a few of the best sorts in these pages, though there are many others well deserving a place in an Orchid collection, especially where room is not an object. These plants are subject to the red spider and the thrips, to prevent the attacks of which the leaves should be well syringed during hot weather.

S. aurea.—Pseudobulbs and leaves dark green, and together about eighteen inches high. The colour of the flowers is yellow. It blooms during the summer and autumn months. Native of Guatemala.

S. Bucephalus.—This fine plant is certainly one of the richest coloured in the whole family. Its flowers, which are of a bright orange, with large blood-red blotches, are usually produced about the month of August; and, like most of this family, it emits a powerful odour. Native of Ecuador.

S. Devoniensis.—This species grows between twelve and eighteen inches high, with somewhat lighter green leaves than many of the kinds. The flowers are orange, spotted with red. They are produced during July and August. Native of Mexico.

S. grandiflora.—A distinct species, which grows about a foot high. The flowers are white and very large. It blooms at different times of the year, and lasts about three days in perfection. Native of Trinidad.

S. insignis.—Sepals and petals pale yellow, spotted with red; the lip nearly white, spotted with purple. It produces its flowers in August and September. Native of Trinidad.

S. Martiana.—The sepals and petals are straw-coloured, spotted with red; the labellum white. It blooms during the autumn. Native of Mexico.

S. oculata.—A free-flowering species. The colour of the flowers is pale yellow, spotted with purple. It blooms from July to November. Native of Brazil.

S. tigrina.—The handsomest of the genus. The pseudo-bulbs of this fine species are dark green, and support a large and broad deep green plaited leaf; the blossoms are very large, pale yellow, barred and blotched with deep chocolate. It blooms in July, August, and September. Native of Mexico.

S. tigrina lutescens.—This is also a fine variety from Guatemala; the flowers are brilliant yellow, inclining to orange, and barred with deep chocolate. Blooms at the same

time as *S. tigrina*. It makes a fine plant for exhibition, on account of its large showy flowers.

S. Wardii.—A handsome plant, and one which produces a great quantity of flowers on a spike; the sepals and petals are golden orange and yellow, and rich dark purple at the base of the lip. Native of Guatemala.

THUNIA.

A small genus of Asiatic Orchids, which are mostly included with *Phajus*, from which genus they are, however, readily distinguished by their growth, and by several other differences of a botanical character. They are characterised by their terete stems, which grow in fascicles, by their deciduous leaves, and by their terminal clusters of flowers. The plants belonging to this genus should be grown in the East Indian house, and treated liberally to water; they will grow upon blocks, but pot culture is best. In potting *Thunias*, the drainage provided should be perfect, and the material should be rough peat and sphagnum in about equal parts. After the flowers are past and the leaves fallen, only just sufficient water should be given to keep them from shrivelling, and they should be removed to a lower temperature. *Thunias* may be propagated by division, and also by cutting up the old pseudo-bulbs into pieces about six inches long, and inserted in a pot in the same manner as ordinary cuttings. This latter operation should be effected just when the young growths are complete.

T. alba.—The stems of this plant are round, and usually about two feet high, clothed with leaves from the base upwards; leaves clasping the stem at the base, some six or eight inches long and glaucous; these fall during the resting season, leaving the slender terete stems naked. The flowers are produced on a short terminal raceme just as growth is finished; the sepals and petals are pure white; lip white,

beautifully pencilled along the centre with purple and lilac. The plant now under consideration should be potted in good fibrous peat and sphagnum, and during the growing season be kept in the East Indian house; but after the flowers are faded, water must be gradually diminished until it is entirely withheld, when the cool-house will suit it best; care must, however, be taken to prevent its shrivelling. It blooms during July and August. Native of Northern India, and also of Burmah.

T. Bensoniæ.—A beautiful species of more recent introduction than the preceding, which it much resembles in general appearance, but produces much finer and different coloured flowers. The stems are erect, round, and from one to two feet in height. The leaves are distichous, from six to ten inches long, green above, but slightly glaucous beneath. The flowers are large, measuring some two or three inches across, and produced from the top of the stem on a short raceme like those of *T. alba*, just when growth is finished; sepals and petals about the same size, spreading, open, bright reddish-purple in colour, becoming white towards the base; lip large, open, rich purple in front, with a white base, the crest being bright yellow. Native of the mountains of Moulmein.

T. nivalis.—This plant resembles *T. alba* more than the preceding; its erect terete stems, which seldom exceed eighteen inches in length, are furnished with glaucous distichous leaves, which are about six inches in length, and fall off during the resting season. The flowers are produced on a short raceme from the apex of the growth, each cluster containing some five or six pure white blooms. Native of Sylhet.

TRICHOCENTRUM.

This is a small genus of dwarf stemless plants, the flowers

of most of the known species of which are very small, and interesting only in a botanical point of view. There are, however, some few exceptions to this rule, of which the species here quoted are examples. They should be grown on a block, or in a small basket, and treated to a moderately cool temperature; care must, however, be taken that no stagnant water remains about the roots.

T. albo-purpureum.—A very desirable plant, with somewhat broad dark green leaves. Flowers large and freely produced; sepals and petals cinnamon-brown; lip large, white, with a pair of purple spots near the base. It should be grown at the cool end of the *Cattleya* house. It would appear to be a native of New Grenada.

T. tigrinum.—This is said to be a splendid species, very much resembling the preceding in foliage and habit of growth. The flowers are described as resembling those of *Cattleya Aclandiæ* in size, and in the markings of the sepals and petals; lip very large, white in front, and orange towards the base. It is an extremely rare plant.

TRICHOPILIA.

This genus contains some very handsome and distinct plants; their flowers are curious in form, and are produced from the base of the pseudobulbs. They are dwarf evergreen plants, and are best grown in pots, with peat and good drainage, and should be well elevated above the rim of the pot on account of their drooping flowers, which proceed from the base of the bulbs. Too much water at the roots at any time is highly injurious to them. They will do best in the Mexican house, and are propagated by dividing the plant.

T. candida.—A very pretty kind, producing pseudobulbs several inches long, bearing light green leaves. The flowers are freely produced, usually three on each spike; sepals

and petals white; lip white stained with yellow in the throat.

T. coccinea.—A very pretty and distinct species from Central America. The sepals and petals are long and twisted, yellow and reddish-brown in colour, and the lip is deep crimson, with a narrow edge of white. It produces its blossoms in May and June, lasting three weeks in beauty. Of this plant there are many varieties.

T. crispa.—A charming species, and very rare, resembling *T. coccinea* in its growth, but the pseudobulbs are larger and the whole plant is more robust. It requires to be grown in a pot, and should be elevated three inches above the rim, in order to show off the flowers, which are drooping, to the greatest advantage. The drooping spike is produced from the base of the bulbs, and bears two and three large flowers on each; sepals and petals light crimson, faintly edged with white; lip large and slightly deeper in colour than the sepals. It blooms during April, May, and June, and lasts about two weeks in perfection. R. Warner, Esq., of Broomfield, exhibited a fine specimen of this plant, with upwards of a hundred flowers, at the St. Petersburgh International Exhibition in 1869. This plant has the peculiarity of producing two crops of flowers from the same bulbs every year. Native of Central America.

T. crispa marginata.—A decided acquisition to a very pretty genus, all of which are dwarf, compact in habit, and abundant bloomers. This is a much finer plant than *T. crispa*, and will prove very useful for exhibition purposes, as it flowers in June and July. The plant grows some twelve inches high; pseudobulbs ovate; leaves lanceolate, slightly pendulous and dark green. The spikes are produced from the base of the bulbs, bearing two and three blooms each, which are large and very showy; the sepals and petals are of a light crimson

red, with a white margin; the lip is of a beautiful deep crimson, two inches across, and narrowly edged with white. This is, without doubt, the finest of all the *Trichopilias*. I have only seen this in Mr. Warner's collection, and it is nicely figured in his "*Select Orchidaceous Plants*." Native of Central America.

T. Galeottiana.—The pseudobulbs of this plant are broad, and light green, whilst the leaves are quite dark; the flowers are very freely produced; sepals and petals white; lip light pink, margined with white, and suffused with yellow. It requires cool treatment, and should be potted in peat and sphagnum. Native of Mexico.

T. picta.—A beautiful species, with pseudobulbs about two inches long, bearing a single dark green leaf some six inches high. A very distinct kind, the flowers of which are of a pale yellow, and spotted with brown. In bloom in August and September, and continues two weeks in good condition. Native of Chiapas.

T. suavis.—A magnificent plant, the pseudobulbs and leaves of which very much resemble those of *Odontoglossum grande*; the bulbs are, however, flatter and sharper at the edges. The flowers are white, spotted with pink, and as many as three are produced on a spike. It blooms in March or April, lasting about two weeks in perfection, and is best grown at the coolest end of the house. Native of South America.

T. suavis grandiflora.—A lovely variety of this really handsome Orchid; the pseudobulbs and leaves are very large; the flowers are also more highly coloured, and expand very much better; the sepals and petals are white, and the lip, which is upwards of three inches in diameter, is white, with large rich crimson spots, the upper part deep orange.

T. tortilis.—A pretty species from Mexico; pseudobulbs and leaves about six inches long, and dark green. The sepals

and petals are brown and pale yellow, twisted like a cork-screw; the lip white, spotted with red. It produces its flowers freely at different times of the year, and lasts two or three weeks in beauty. There are two varieties of this plant, one with much brighter coloured flowers.

T. Turneri.—A distinct plant, and one well deserving a place in every collection; pseudobulbs light green, bearing a single dark green leaf; flower spike eight inches long, each bulb producing two, which together bear six flowers; sepals and petals white; lip white, suffused with yellow. It should be grown in the cool-house.

UROPEDIUM.

This genus contains but one species, as far as I am aware; it would appear to be nearly related to *Cypripedium*, from which it differs, however, in being destitute of a pouched lip.

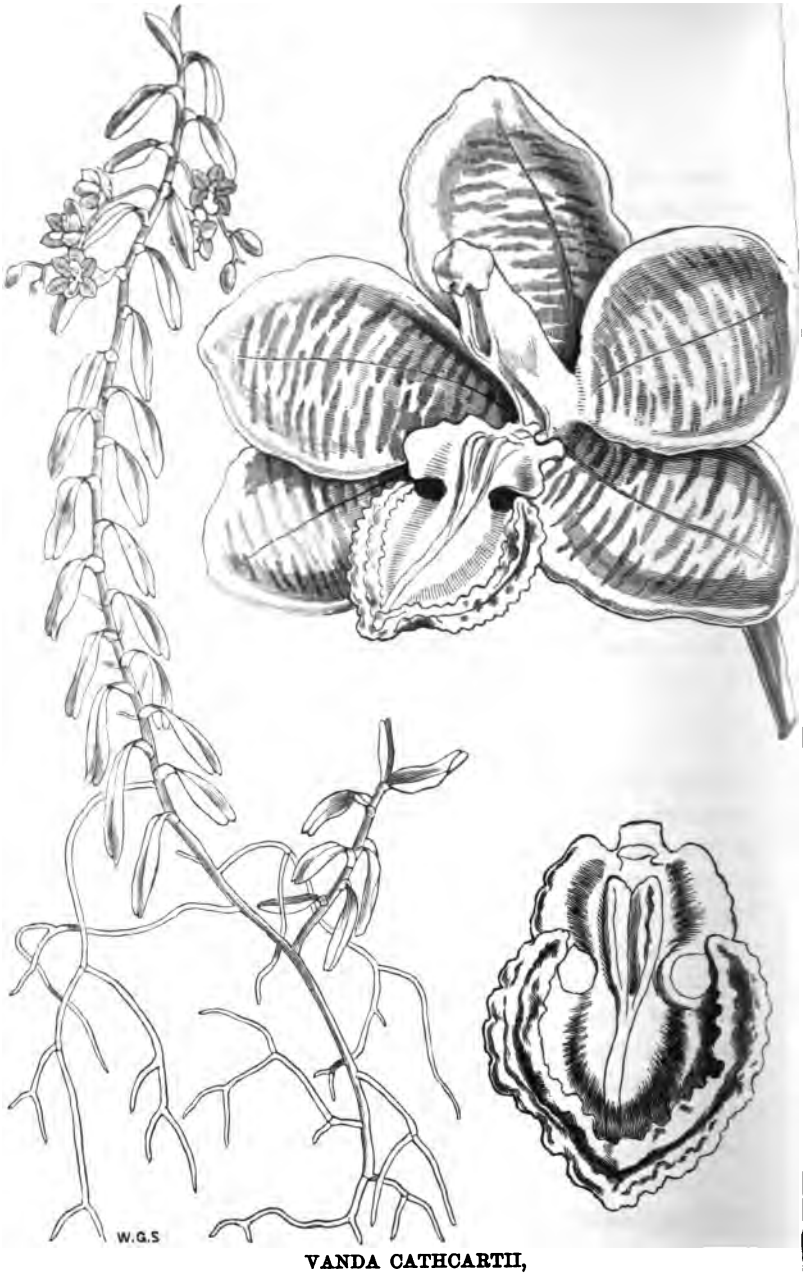
U. Lindeni.—A singular and compact-growing plant, with pale green foliage about ten inches in length. In growth it resembles *Cypripedium caudatum*, and throws up its flower spikes from the centre of the leaves. The blossoms, which are produced two or more together, are large and singular in shape; sepals broad, with waved edges, greenish yellow, striped with dark green; petals and lip reddish brown, the points lengthened out into long tail-like appendages, which frequently attain as much as two feet in length. Though not very showy, this plant is well worth growing on account of its peculiarly-shaped blossoms; and it is by no means a difficult plant to cultivate, if it gets the treatment it requires. I have found it to do best in a pot in a mixture of loam, peat, and sand, with good drainage; place the plant just below the rim of the pot, and water liberally at the roots during the growing season, which is nearly all the year. It

requires but little rest; for having no fleshy bulbs to support it, a certain degree of moisture is necessary at the roots, even when it is comparatively at rest. After growth is completed it will begin to show flower, and then care should be taken that it does not get dry at the root, for it requires a good quantity of nourishment to bring its flowers to perfection. I have seen this plant shrivelled when the blossoms have been showing, and from this cause they have been nearly spoiled and the plant injured. If this plant is allowed to get into an unhealthy state it is a long time before it recovers; it blooms during the summer months, and lasts some time in beauty. Propagation is effected by dividing the plant when done growing, or just as it begins to push. The finest plant I ever saw of this was grown by Mr. Mitchell, gardener to R. F. Ainsworth, M.D., of Manchester, in whose fine collection it has frequently flowered.

VANDA.

This genus contains several lovely species with magnificently-coloured flowers, some of which are very large. Indeed, there are not many Orchidaceous plants that surpass *Vandas* in the beauty of flowers. Their habit of growth is the same as that of *Aerides* and *Saccolabium*. Their foliage is evergreen, but the leaves of most of the species are longer and more graceful. The spikes are erect and produced from the axils of the leaves, whilst the majority bear large waxy flowers. They require treatment similar to that of *Aerides*, and become infested with the same sort of insects. Propagation is effected by taking off the young growths which spring from near the base of the stem, or by cutting the stem as directed in the case of *Aerides*.

V. Batemanii.—A noble, upright-growing stately plant, the leaves of which are thick and very stiff, and of a pale green



VANDA CATHCARTII,

Northern India.

colour. The spike is long and erect, bearing many large flowers; sepals and petals thick and fleshy, yellow spotted with crimson in front, rosy crimson at the back; lip crimson. It blooms in July, August, and September, and continues blooming for three months. Native of the Philippine Islands.

V. Bensoni.—A very nice addition to this beautiful genus, belonging to the *V. Roxburghii* section. A free-growing plant, producing spikes eighteen inches long, with flowers two inches in diameter, white on the outside, and greenish yellow, dotted with reddish brown on the inside; lip white and violet colour. It flowered for the first time with the Messrs. Veitch, in the summer of 1866. Native of Rangoon.

V. Cathcartii.—This exceedingly rare plant somewhat resembles *Renanthera coccinea* in general appearance. The leaves are short, broad, and bluntly bilobed, arranged in a distichous manner, and pale green in colour. The spike is drooping, bearing four or five large fleshy flowers; sepals and petals chocolate-brown, striped with numerous transverse bands of yellow on the inside; lip large, the centre lobe cordate, having a soft yellow thickened margin. This species has now become established in our collections, and has flowered the last two years in the collection of C. Stead, Esq., Baildon, near Leeds. Native of Northern India.

V. cærulea.—This remarkably handsome plant produces upright spikes, each bearing nine or ten flowers, or more; the flowers are five inches across, are produced during the autumn months, and last six weeks in perfection. It does not require so much heat as the other kinds. I saw this plant in very robust health with Mr. Denning, gardener to Lord Londesborough: a plant upwards of two feet high, with foliage to the base, every leaf perfect, and bearing strong spikes, each supporting eighteen large flowers. Native of Northern India.

V. cærulescens.—This elegant little species is of recent introduction, and extremely rare. The leaves are narrow and strap-shaped, bilobed at the ends, and dark green. The spikes are erect, bearing from ten to twenty flowers; sepals and petals pale blue outside, lilac within; lip small, dark blue at the sides and on the disk, but paler in front. It blooms during spring and early summer. Native of Burmah.

V. cristata.—A charming Orchid from Northern India; sepals and petals greenish white, the lip large and crested, spotted and striped with dark brownish black. It produces its flowers from March to July, and lasts in bloom for six weeks or two months.

V. Denisoniana.—In habit of growth this plant much resembles *V. Bensoni*, yet the leaves are broader and somewhat longer; they are strap-shaped, unequally bilobed at the apex, and dark-green. The flowers are medium-sized, thick, and fleshy; sepals and petals white, tinged with green; lip white, and furnished with a short spur. This is the first white *Vanda* which has yet been discovered, and is named in honour of Lord Londesborough, an enthusiastic admirer of this order. Native of Burmah.

V. gigantea.—A fine massive plant, with noble dark green foliage, three inches broad, and of graceful habit. The flowers of this plant have not given general satisfaction to Orchid growers, but I think, as it acquires size and strength, it will prove a much finer species than many imagine. The large plant in my collection produced, last season, two long spikes, each bearing twelve flowers of large size and good substance, the colour yellow, with brown blotches and crimson spots. Mr. Wilson, gardener to W. Marshall, Esq., of Enfield, informs me that the plant in Mr. Marshall's collection has produced seventeen flowers on one spike. It continues a long time in full perfection, if the flowers are kept dry. This is

VANDA DENISONIANA,

Burmah.

the most majestic and massive plant of the whole tribe. Native of Burmah.

V. Hookeri.—This distinct-growing species is in habit like a small form of *V. teres*. It has resisted many attempts to be introduced in a living state; but we have now got it fairly established, though it has not yet been bloomed in this country, so far as I am aware.

V. insignis.—This very beautiful and extremely rare plant has long been an inmate of our gardens by name, but that name has been given in mistake to a variety of *V. tricolor*, as the recent introduction of the true plant has proved. The flowers of this species are as large as those of *V. tricolor*; sepals and petals chocolate brown, spotted with deep blood-red, yellowish white on the outside; lip large, spoon-shaped, its side lobes white, the centre rich purple. It is exceedingly handsome, producing its blooms in May and June. Native of the Malay Islands.

V. Roxburghii.—A good old species from India, with white and purple flowers, which appear during the summer, and last five or six weeks in beauty. There are two varieties of this plant, one being much handsomer and having a darker coloured lip than the other.

V. suavis.—A truly magnificent Orchid from Java, of strong-growing habit, and very free in flowering. It produces branching spikes of flowers, each being large, of a creamy white, spotted with crimson, and blooms at different times of the year, lasting a long time in perfection. This makes one of the finest of all plants for exhibition. One of the finest and most distinct varieties of it was exhibited at the Manchester Exhibition in 1869, by G. Gottschalcke, Esq.; it was remarkable for its broad leaves and stout stem, the flowers being very large, the sepals and petals profusely spotted, and the lip tipped with white.

V. teres.—A handsome, curious-growing, and distinct Orchid. The stem as well as the foliage is terete or cylindrical, and dark green. Its large red and yellow-tipped flowers are produced from June to August, and last four or five weeks in beauty. It is rather a shy-flowering species, and is best kept rather dry during the winter, so as to predispose it to bloom. It thrives best on a block of wood, the block being plunged into a pot. Native of Sylhet.

V. teres Andersoni.—A very fine variety of this handsome and distinct species. It has the same habit of growth as the preceding, but is far more free in blooming, producing flowers when quite young. The spikes are ten inches in length, and bear from five to six flowers, which are richer and deeper in colour. Native of Sylhet.

V. tricolor.—A charming free-growing species from Java; it grows in the same way as *V. suavis;* the sepals and petals are pale yellow, spotted with crimson; lip purple, striped with white. It blooms at different times of the year, and lasts long in perfection. There are two or three varieties of this plant, some much inferior to others. It makes a superb plant for exhibition purposes, as do all the varieties.

V. tricolor Dodgsoni.—A superb variety, named in honour of a most enthusiastic cultivator of these plants, with whom it originated. The flowers are large, and borne in great numbers upon the spikes; sepals and petals light amber-colour, streaked and blotched with reddish brown and margined with violet; lip large, rich purplish violet, with a few white blotches near the base. It is very highly-scented. Native of the Indian Islands.

V. tricolor insignis.—This plant must now take its place as a variety of *V. tricolor*, since we have the true *V. insignis* at last in our gardens; it will not, however, be any the less welcome to Orchid growers though it be but a variety of

V. tricolor, for it makes a handsome specimen; sepals and petals light yellow, spotted with crimson; lip pale lilac. It blooms at different times of the year, but generally in spring and autumn, and continues in bloom for six weeks. Native of Java.

V. tricolor superba.—A charming Orchid from Java, and a fine variety of the preceding, often called Rollisson's *V. suavis*. Of this there are many varieties, the best of which is nearly equal to *V. suavis* (Veitch's).

V. tricolor Russelliana.—This beautiful variety is very distinct both in habit of plant and flower. It has a peculiar and gracefully pendulous style of growth, and is, at the same time, very robust. The spikes are long, and the flowers very bright in colour. It bloomed with Mr. Sorley, gardener to J. Russell, Esq., of Falkirk, and is an extremely fine variety.

VANILLA.

This genus contains a few species only. They are all climbing plants, with dark green terete stems, and oblong fleshy leaves, while the flowers of most of the known species are dull-coloured and uninteresting. *Vanilla* is, perhaps, the only genus of Orchidaceous plants which is of commercial value. The fruits of various species of this family produce the *Vanilla* so extensively used for flavouring chocolate, liqueurs, ices, &c., and which is considered one of the finest of aromatic perfumes. These plants require strong heat during their growing season, and should be potted in peat and sphagnum moss, and have either some rough logs of wood to grow upon, or should be trained upon a wall.

V. Phalænopsis.—This is an exceedingly interesting plant, and one which is quite an exception to the rest of the known species, as it produces very showy flowers. These flowers are large and produced in bunches; sepals and petals white,

tinged with rose; lip large, pale rose outside, rich orange within. At present it is an exceedingly rare plant, but one which is well deserving of the attention of Orchid growers. Native of Madagascar.

WARREA.

W. cyanea.—A very pretty and distinct Orchid from Columbia. It is an upright-growing plant with evergreen foliage, and requires to be grown in a pot, with peat and good drainage, in the East Indian house. The colour of the flowers is white and purple. It blooms in June, lasting a long time in beauty. A rare species.

W. tricolor.—A very distinct species from Brazil. The flowers are produced on an upright spike, two feet high, in June and July; sepals and petals white; the lip white, with yellow and purple in the centre; the blossoms last a long time in perfection. It requires the same treatment as the former one. There are several other species, but I have not seen them bloom.

ZYGOPETALUM.

This genus comprises many handsome plants with evergreen foliage, which generally bloom during the winter months, a circumstance which makes them very valuable. Most of the species are rather large-growing plants, of easy culture; the *Cattleya* house is the best place to grow them in, and they should be in pots, with peat and good drainage, and plenty of water at the roots. They are propagated by dividing the plants.

Z. aromaticum.—A rare and little-known plant, which I have only seen in the rich collection of J. Day, Esq., under the care of Mr. Stone. It does not, however, appear to be a very strong-growing species. The flowers are large, three or four inches in diameter; the sepals and petals of a light

soft green; the lip large, somewhat cordate, the margin white and crenate, while the centre is of a rich deep blue. It emits a very strong but agreeable perfume; and succeeds in a pot with peat and sphagnum moss. Native of Central America.

Z. brachypetalum.—A Brazilian species, and one of the handsomest of the genus, having brownish sepals and petals, a little marbled with green, and a deep blush violet lip, veined with white. It blooms in December, lasting long in perfection.

Z. crinitum cæruleum.—A handsome variety from Brazil. It produces upright spikes, sometimes two from the same pseudobulb, and bears during the winter beautifully variegated flowers, which last a long time in perfection. The sepals and petals are green, barred with brown; the lip is white or cream-coloured, streaked with bright blue.

Z. Gautieri.—An elegant but somewhat rare plant. The pseudobulbs are much furrowed, and bear large dark-green plaited leaves. The flowers are large; sepals and petals green, blotched with brown; lip white, with a purple stain towards the base. Native of Brazil.

Z. gramineum.—This is a dwarf-growing species, attaining the height of ten inches; leaves narrow and light green in colour; flowers white and purple, two to three on a spike, which is about six inches high, and produced from the base of the pseudobulbs in the autumn months. This very distinct and beautiful plant I have only seen in the fine collection of Lord Egerton, Tatton Park, under the care of Mr. Cliff, who finds it succeed best potted in sphagnum and peat, and kept in the East Indian house.

Z. intermedium.—A free-growing, useful old plant, easily grown, and a profuse bloomer; its flowers begin to open during autumn, and continue in full perfection for five or six

weeks; sepals and petals green, tinged with brown; lip large and flat, blue, streaked with deep purple. Native of Brazil.

Z. Mackayi.—A very handsome plant, producing long spikes of large flowers during the winter months. The colour of the flowers is greenish yellow, spotted with brown and lilac. There are several varieties of this plant, some much finer than others. It lasts in perfection a long time.

Z. Mackayi intermedium.—A very fine and distinct plant having the leaves longer than in *Z. Mackayi;* it flowers at the same time, but the blossoms are of a paler colour, with a fine large lip; it is well worthy of cultivation. Native of Brazil.

Z. maxillare.—A free-flowering pretty species from Brazil, producing its drooping spikes at different times of the year, and keeping in beauty a long time. I have bloomed this species with seventy flowers on a plant at one time; sepals and petals greenish, stained with chocolate near the base; the lip a rich blue.

Z. rostratum.—A showy compact free-flowering plant, which blooms three times a year, and lasts six weeks in perfection. It requires more heat and moisture than any of the other species. This makes a fine exhibition plant when well grown; I have shown it with twenty or more flowers, and grown like this it is a beautiful object; sepals and petals yellowish green; lip two inches across, white, striped with pink. Native of Demerara.

ORCHIDS FOR THE GREENHOUSE, COLD FRAME, OR PIT.

THIS subject was first introduced to these pages in the third edition, and I am glad to find the remarks then made have induced many to turn their attention to these beautiful plants, for there are many

Orchids which yield most exquisite flowers, that will thrive entirely without artificial heat. Orchid growers too often set on one side all those which do not succeed under artificial heat. My object in introducing the subject is to bring into notice some of those beautiful terrestrial plants from the Cape of Good Hope, North America, the South of Europe, and Australia, which at present are only seen at rare intervals, but which when seen are always admired. It also opens a field for many not possessing the advantages of an East Indian and Mexican Orchid house, or, indeed, any plant house, to commence the study of this beautiful class. The terrestrial species, from the Cape and other places, which do not, as a rule, produce large flowers, are yet most exquisitely coloured, and most fantastic in shape. We have, however, some fine things to introduce from the Cape yet. Mr. Plant, in one of his journeys in South Africa, in describing some of the rarities he met with, says:—"The Terrestrial Orchids are numerous and very beautiful. In my opinion, there are many here but little inferior to the most showy of the epiphytous kinds. Fancy a plant with the general characters of an *Ophrys*, producing a spike of bloom as large and as thickly set as those of *Saccolabium guttatum*, often, indeed, measuring two feet in length, of a bright salmon colour, intermixed with as bright a yellow. Another with plaited foliage, and a nodding head of some twenty bright yellow blossoms, having a deep stain of crimson on the cucullate lip, in the manner and of the size of a *Dendrobium*. Again, another with fleshy leaves and an erect stem of about two feet, supporting from fifteen to thirty large yellow flowers, the lip lined and blotched with pale purple, bearing the aspect of some robust *Epidendrum*." Many of these fine things would no doubt ere now have enriched our gardens, had Mr. Plant been spared to return alive. What can be more

gorgeous than the *Disa grandiflora*? There are numerous members of this family at the Cape, and though they are not so large in the flower as the species just named, yet they are exquisitely beautiful. Again, the elegance of the North American *Cypripediums* is not surpassed by those which inhabit the tropics. Now all these can be cultivated in a cool greenhouse or frame, either planted out or in pots. Indeed, many of the terrestrial kinds will succeed well in the open air if a little care is bestowed upon the selection and preparation of the situation. The number of species I have here enumerated is not extensive; but there is no reason to prevent us, in the course of a few years, from largely increasing them, if the plant-loving ladies and gentlemen, as well as gardeners, will encourage the growth of these beautiful plants; and any one having friends at the Cape, North America, or Australia, should strongly press upon them to send home the tubers of any Orchids they may find. By this means we should have a great many new additions to our collections.

The Orchids described in the following pages are all terrestrial species, and must not be elevated above the rim of the pot, as is the custom with the epiphytal ones, but there must be a space of an inch or more from the rim to the soil, to allow of a sufficient quantity of water being given at one time. The soil best adapted for their growth is a mixture of good fibrous loam, turfy peat, and silver sand, adding more or less of each, according to the peculiar habitat of the particular plant to be potted. They must all have good drainage, and the addition of lumps of sandstone to the soil will have a beneficial effect, serving to keep the soil open, and the roots cool and moist. They are mostly all propagated by division of the roots, just as the fresh growth commences; and though they all require a season of rest, they must never be allowed

to become dry at the roots, nor must the temperature be allowed to be lower in winter than from 35° to 40°; not but some of the kinds will withstand some few degrees of frost, but I believe they will all thrive far better if not subjected to such extremes. In the growing season, abundance of water should be poured round and about them, to keep a moist and cool atmosphere, in which they delight.

CYPRIPEDIUM.

C. acaule.—A pretty stemless species. The leaves are produced in pairs, oblong, slightly hairy, and light green; the large and beautiful flowers are borne singly upon short stems from the centre of the plant, and are in colour rose and purple; it flowers in May, and retains its beauty for a considerable time. Native of North America.

C. Calceolus.—This, though a British species, is so rare and beautiful, that it well deserves a place in any and every collection; it grows about a foot high. The leaves are smooth and dark green; the flowers yellow and brown. Native of Europe.

C. candidum.—An elegant little species which at present is rather rare in cultivation. Leaves somewhat lanceolate-acuminate in shape, and dark green. The flowers are produced singly, and are of moderate size; sepals and petals green with brown streaks, the latter slightly twisted; lip somewhat oblong, white spotted with brownish purple. It is a very desirable plant. Native of N. America and Canada.

C. guttatum.—A perfect little gem, making a stem about three inches high, with two broad leaves and a single flower, which is large and most beautifully marked with rich purple and white. It is found in boggy swampy places in Canada and Siberia.

C. macranthum.—One of the finest and most distinct of the

terrestrial species of this genus; it grows about ten inches high, and produces its charming large purple flowers early in June. Native of Siberia.

C. parviflorum.—Another very handsome species, somewhat resembling *C. Calceolus*, but taller in its growth, and the stem and leaves are slightly downy; sepals and petals a little twisted, yellow, streaked with reddish brown; lip large and round, and wholly of a rich yellow. Native of North Carolina.

C. pubescens.—This fine plant is also from North America; it makes a stem a foot or more high, with large downy light green leaves, and produces in June its charming yellow and purple flowers, which continue in perfection for a very long time.

C. spectabile.—A superb plant, growing from one to two feet high, and supporting large downy leaves, with beautiful rose and white flowers. It generally blooms in May and June, and makes one of the finest plants for exhibition purposes, the flowers being so distinct from those of any other *Cypripedium*. R. Hanbury, Esq., of The Poles, Herts, exhibited a very fine plant several years ago at the Horticultural Society's Exhibition, Regent's Park. Native of North America.

C. spectabile album.—Resembles the preceding in habit of growth, and is from the same country; but its large flowers are of a uniform creamy white, and are very attractive.

DISA.

This is an extensive family, but the two described are the finest I have seen. There are more species in cultivation; but as they have not yet flowered, it is difficult to determine which they really are. Nearly the whole of the species are well worth growing, for although their flowers are not so large as those of *D. grandiflora*, they are very handsome, and

of easy culture. The following, some of which I have seen growing, though not flowering, are well worthy of attention, being very pretty and interesting subjects for the cool-house:—*D. cernua*, flowers green and yellow; *D. chrysostachya*, golden yellow; *D. cornuta*, purple and white; *D. draconis*, white and dark blue; *D. graminifolia*, azure; *D. lacera*, white; *D. longicornis*, blue; *D. macrantha*, large, white, and sweet-scented; *D. maculata*, spotted blue; *D. melaleuca*, brown and white; *D. patens*, yellow; *D. prasinata*, green and reddish purple; *D. racemosa*, purple; *D. rufescens*, purple; *D. spathulata*, pale blue; *D. tenuifolia*, yellow. Many more species might be named; but enough has been said, I think, to show that we have a rich stock of novelties in store yet.

The best mode of treatment to be adopted for these plants is to pot them in shallow pans, in some good fibrous peat in a rather rough state, with a little silver sand, well-rotted manure, and live sphagnum moss added to it. They require a liberal supply of water during the growing and flowering season. During the time they are making vigorous growth, they may be syringed twice a day, or even oftener. This is far better than using a watering-pot, as it serves the purpose of a shower of rain, and helps to keep the red spider from the leaves—an insect which is very injurious to these plants. The plants rest after the flowering season is over, and during this time less moisture is required. It is a good plan, after the growing and flowering seasons are over, to place the plants in rather a shady part of the garden, and syringe them occasionally—not keeping them too moist—as they may probably perish if allowed to get dry at any time. The most suitable time for potting them is just as they are beginning to make roots, which is usually in the months of January and February. They are easily propagated, as they throw up suckers in abundance. These should be left till well rooted,

and then be taken off and potted in the material recommended for established plants; after which they must be kept moist, and in the shade, until they make fresh roots. When they become established, place them near the light, and apply more water to the roots. What they principally require is coolness and moisture at the root, and a good season of growth during the winter months. C. Leach, Esq., of Clapham Park, grows the *D. grandiflora* in cold pits, and we never saw any shown in better condition; these plants have been thus grown by him for years.

D. grandiflora.—This fine plant is a native of the Cape of Good Hope. It attains the height of a foot or eighteen inches, bearing on the top of the stems from two to five of its beautiful scarlet flowers in June and July. The blossoms last a very long time in perfection.

D. grandiflora superba.—This certainly ranks among the finest of greenhouse Orchids, and is beautifully figured in Warner's "*Select Orchidaceous Plants.*" It has a creeping underground stem, which throws up young shoots about six inches in height, and of a light green colour. The leaves are affixed to these stems, and the flower spikes, when present, proceed from the top, to the height of eighteen inches or two feet, bearing from two to eight flowers, more than four inches in diameter, of a bright scarlet and crimson, veined with pink; the blossoms are generally produced in June, July, and August, and continue for five or six weeks. It makes a fine plant for exhibition on account of its splendid colour. R. Warner, Esq., grew this fine plant in a cold greenhouse at Broomfield; and I have also seen it in excellent condition in the collection of T. Salt, Esq.

EULOPHIA.

E. Dregiana.—This is a large genus, though there are not many in cultivation; indeed, the greater portion of the

species are not sufficiently showy to render them worth the attention of amateurs with limited space; yet there are some very pretty ones. The species here introduced, and which flowered in the collection of Lord Eversley, at Heckfield, is well worth growing. It is of free habit, producing spikes of flowers which resemble little doves hanging by their beaks; the sepals and petals are chocolate colour, and the lip white. It requires the same treatment as the *Cypripediums*. Native of the Cape of Good Hope.

Goodyera.

G. pubescens.—A charming species, of dwarf habit. The foliage is green, enriched with white markings, and is in appearance something like that of *Physurus argenteus*. It is a beautiful foliage plant, and should be in every collection. Native of North America, and consequently a fine plant for the cold frame. To cultivate this well, put some live sphagnum moss with the peat, and also a portion of silver sand; mix them well together. It requires a liberal supply of water; in fact, it should never be allowed to get dry at the roots.

Habenaria.

H. ciliaris.—A very pretty and rare species, though it has been for a long time an inhabitant of our gardens. It grows about a foot or more in height, with light green leaves, producing a dense cluster of orange-yellow flowers, the lip being beautifully fringed. It requires the same treatment as *Cypripediums*. Native of Canada.

Lissochilus.

L. speciosus.—A free-growing kind, and an old inhabitant of our gardens, though it is so much neglected as rarely ever to be seen. With proper treatment, it grows about two feet

in height, and produces in June its spikes of magnificent yellow butterfly-like flowers, which remain in their beauty for a considerable time. Native of the Cape of Good Hope.

ORCHIS.

A beautiful genus, containing many species well worthy of general cultivation. They require soil and treatment similar to those described in our introductory remarks. In habit of growth, they may be compared to Hyacinths.

O. foliosa.—This makes a very fine exhibition plant, though it is rarely seen. It was exhibited in very fine condition by A. Turner, Esq., Leicester, and has been exhibited frequently in my own collection, where it has always attracted universal admiration. It grows about a foot and a half high, and in May and June produces its dense spikes of beautiful purple flowers, which continue in perfection for some time; it should be in every collection. Native of Madeira.

O. longicornu.—A really beautiful species. It blooms generally from about December to the end of May; and as these plants are so easily grown, if not much disturbed or kept too warm, it is surprising that they are so neglected by the majority of Orchid growers. The present plant grows from twelve to twenty inches high, with flower spikes densely set with bloom from six to eight inches in length; the lip is striped with lilac, and the upper part a rich deep black, forming a striking contrast. Native of the Coast of Barbary.

O. maculata superba.—This is a very fine variety of our British species, *O. maculata*. There are many—or, indeed, most of the native species are very interesting, though they are difficult to manage, or get the credit of being so, because no one perseveres and endeavours to understand their peculiar requirements. The present plant has bloomed very finely with me upon several occasions, and is well worth general

cultivation. It grows about eighteen inches high; the leaves are dark green, beautifully spotted with purple, and the flower spikes, about a foot long, densely set with the beautiful flowers, which are a rich mauve, spotted and blotched with purple, and which last in perfection a long time; flowers in May and June, and is a good match plant for *Orchis foliosa*.

Platanthera.

P. incisa.—An interesting and pretty herbaceous Orchid. It grows about a foot or a foot and a half high; the stem leaves are obtusely lanceolate, and deep green in colour; the flowers are thickly set upon the spikes, and are of a rich purple; the lip being deeply fringed. Native of North America.

Satyrium.

S. aureum.—This is a very interesting family of Orchids from South Africa, and one which succeeds admirably in a cold frame, in turfy peat and fibry loam and sand, with plenty of drainage. As in all other genera, some species are much handsomer than others. This one is a really fine thing, growing a foot or more in height, producing its deep orange flowers, which are shaded with rich crimson, in July and August, and continuing in perfection a long time. I saw it growing very freely at Heckfield, in the collection of Lord Eversley, where many curious and interesting terrestial species are to be found.

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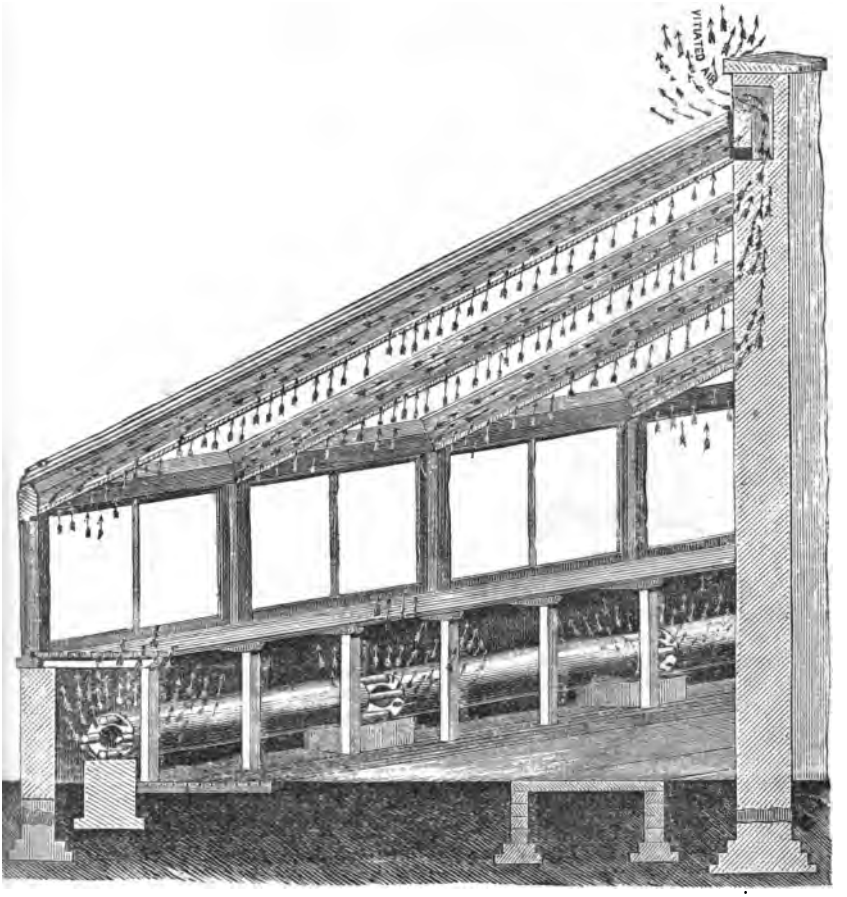

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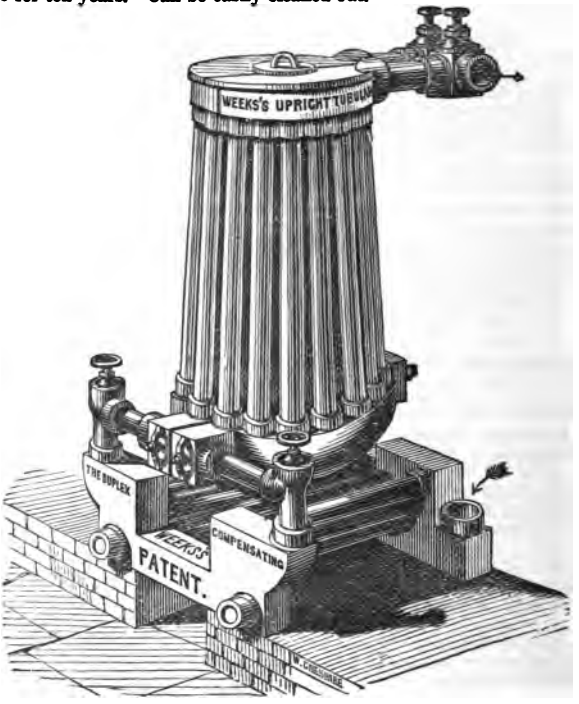

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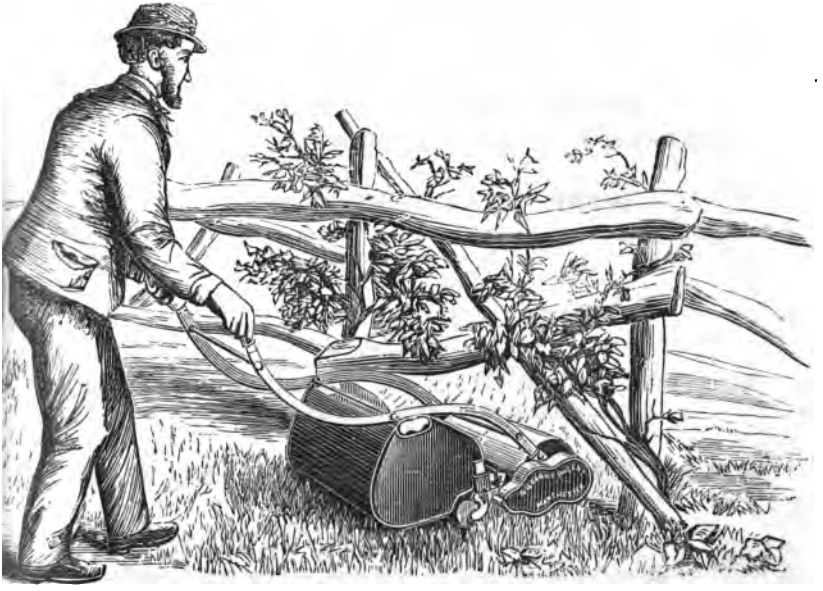

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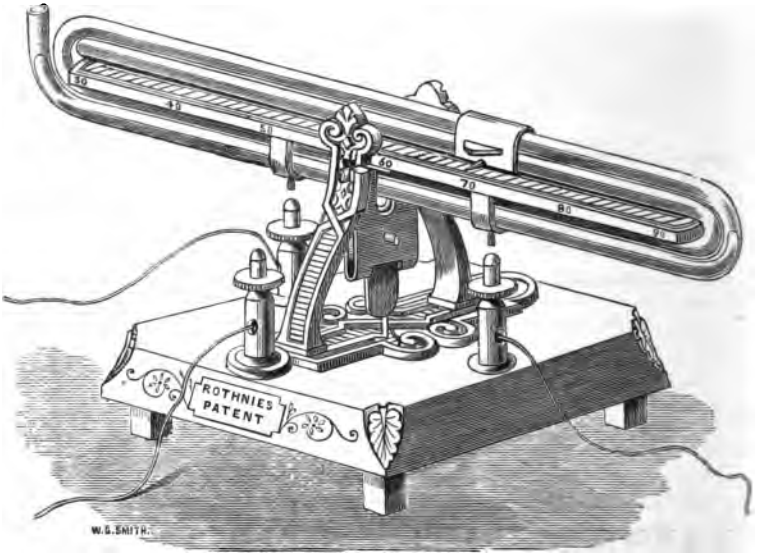

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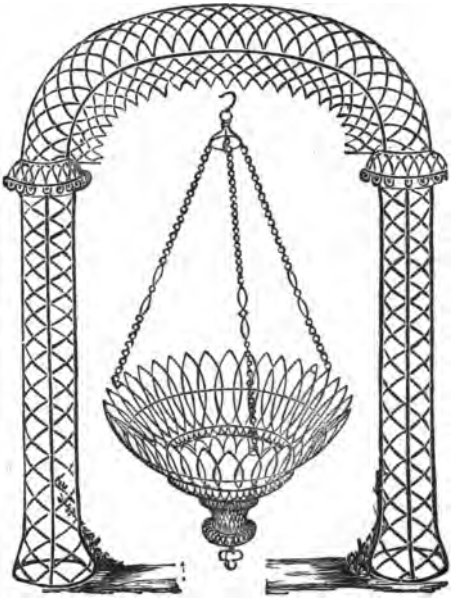

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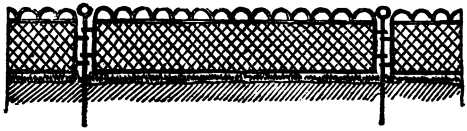

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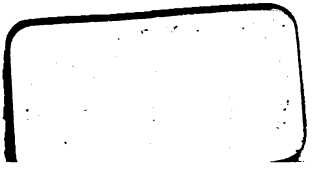
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